wwPDB X-ray Structure Validation Summary Report (i)

Sep 11, 2023 – 12:11 PM EDT

PDB ID	:	4LNN
Title	:	B. subtilis glutamine synthetase structures reveal large active site conformational changes and basis for isoenzyme specific regulation: structure of apo form of GS
Authors	:	Schumacher, M.A.; Chinnam, N.; Tonthat, N.; Fisher, S.; Wray, L.
Deposited on	:	2013-07-11
Resolution	:	3.10 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 (i) 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 (1)) were used in the production of this report:

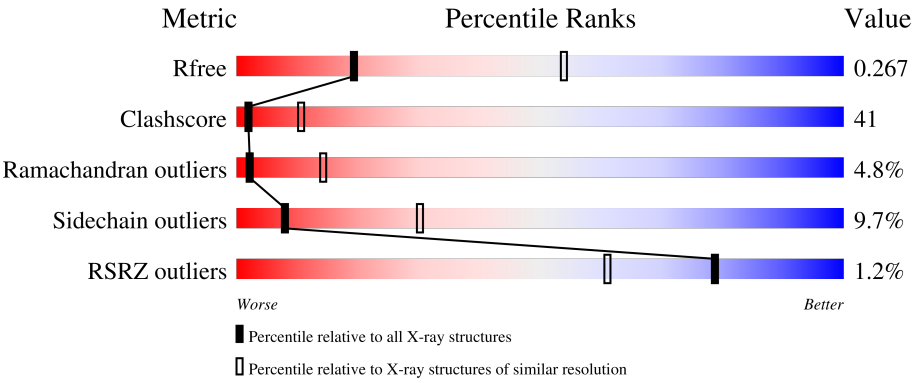
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 3.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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 <=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	443	36% 55% 7%
1	B	443	41% 51% 7%
1	C	443	39% 50% 10%
1	D	443	36% 55% 8%
1	E	443	37% 51% 10%

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Mol	Chain	Length	Quality of chain
1	F	443	2% 33% 58% 8%
1	G	443	42% 45% 11%
1	H	443	41% 49% 8%
1	I	443	39% 49% 9%
1	J	443	36% 52% 10%
1	K	443	38% 53% 7%
1	L	443	38% 51% 9%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 42284 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 Glutamine synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	439	Total	C	N	O	S	0	0	0
			3505	2240	586	663	16			
1	B	439	Total	C	N	O	S	0	0	0
			3505	2240	586	663	16			
1	C	438	Total	C	N	O	S	0	0	0
			3498	2235	585	662	16			
1	D	439	Total	C	N	O	S	0	0	0
			3505	2240	586	663	16			
1	E	438	Total	C	N	O	S	0	0	0
			3498	2235	585	662	16			
1	F	437	Total	C	N	O	S	0	0	0
			3491	2230	584	661	16			
1	G	438	Total	C	N	O	S	0	0	0
			3498	2235	585	662	16			
1	H	437	Total	C	N	O	S	0	0	0
			3491	2230	584	661	16			
1	I	436	Total	C	N	O	S	0	0	0
			3485	2227	583	660	15			
1	J	438	Total	C	N	O	S	0	0	0
			3498	2235	585	662	16			
1	K	438	Total	C	N	O	S	0	0	0
			3498	2235	585	662	16			
1	L	440	Total	C	N	O	S	0	0	0
			3509	2242	587	664	16			

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Mg	0	0
			2	2		
2	B	3	Total	Mg	0	0
			3	3		

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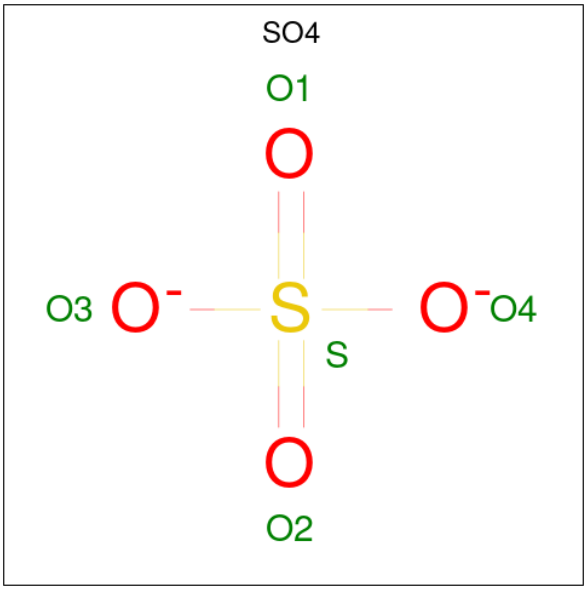
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	2	Total Mg 2 2	0	0
2	D	2	Total Mg 2 2	0	0
2	E	2	Total Mg 2 2	0	0
2	F	2	Total Mg 2 2	0	0
2	G	2	Total Mg 2 2	0	0
2	H	2	Total Mg 2 2	0	0
2	I	2	Total Mg 2 2	0	0
2	J	2	Total Mg 2 2	0	0
2	K	2	Total Mg 2 2	0	0
2	L	2	Total Mg 2 2	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total O S 5 4 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total O S 5 4 1	0	0
3	E	1	Total O S 5 4 1	0	0
3	F	1	Total O S 5 4 1	0	0
3	H	1	Total O S 5 4 1	0	0

- Molecule 4 is water.

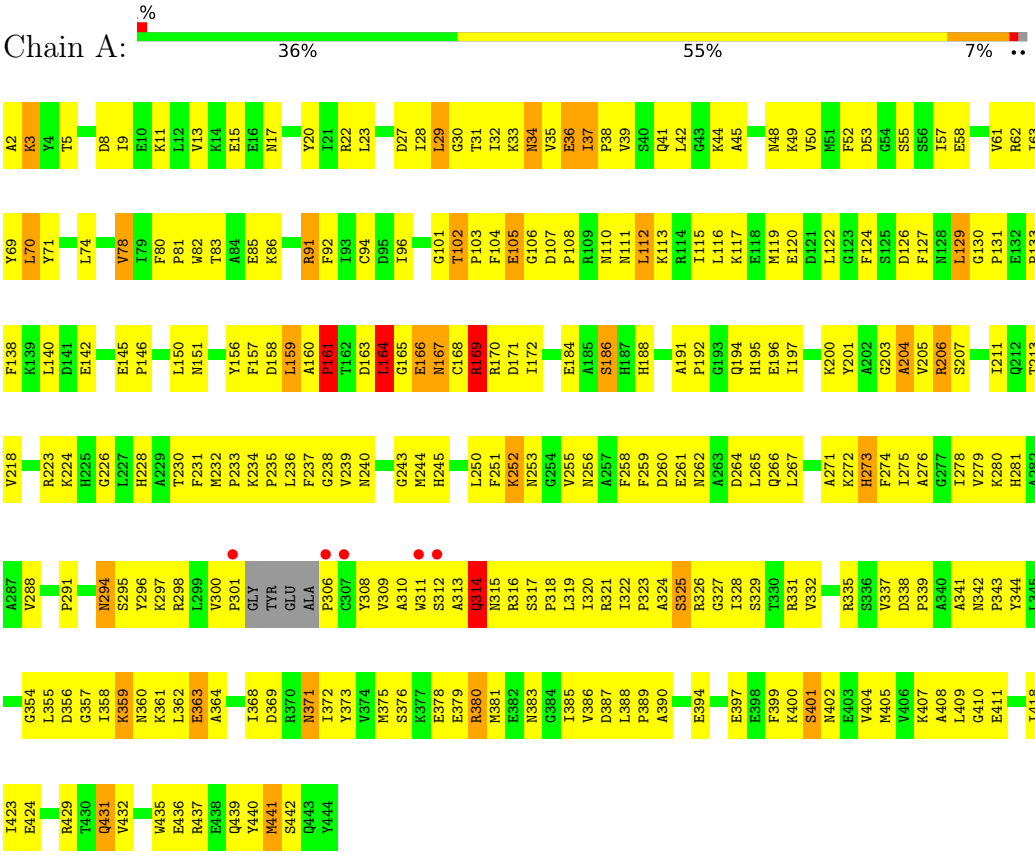
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	17	Total O 17 17	0	0
4	B	27	Total O 27 27	0	0
4	C	28	Total O 28 28	0	0
4	D	20	Total O 20 20	0	0
4	E	17	Total O 17 17	0	0
4	F	24	Total O 24 24	0	0
4	G	21	Total O 21 21	0	0
4	H	20	Total O 20 20	0	0
4	I	23	Total O 23 23	0	0
4	J	12	Total O 12 12	0	0
4	K	22	Total O 22 22	0	0
4	L	22	Total O 22 22	0	0

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.

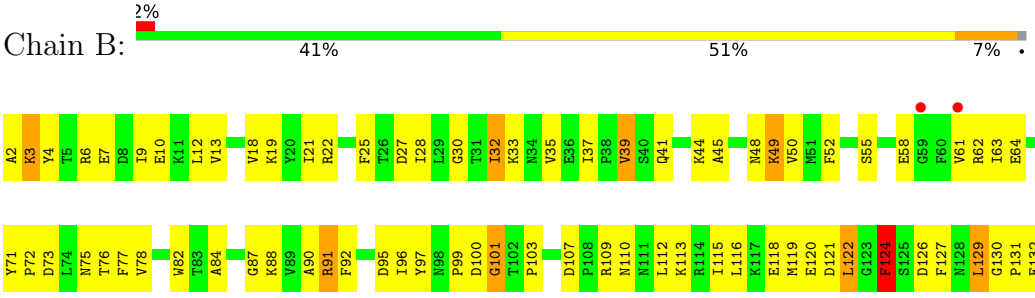
• Molecule 1: Glutamine synthetase

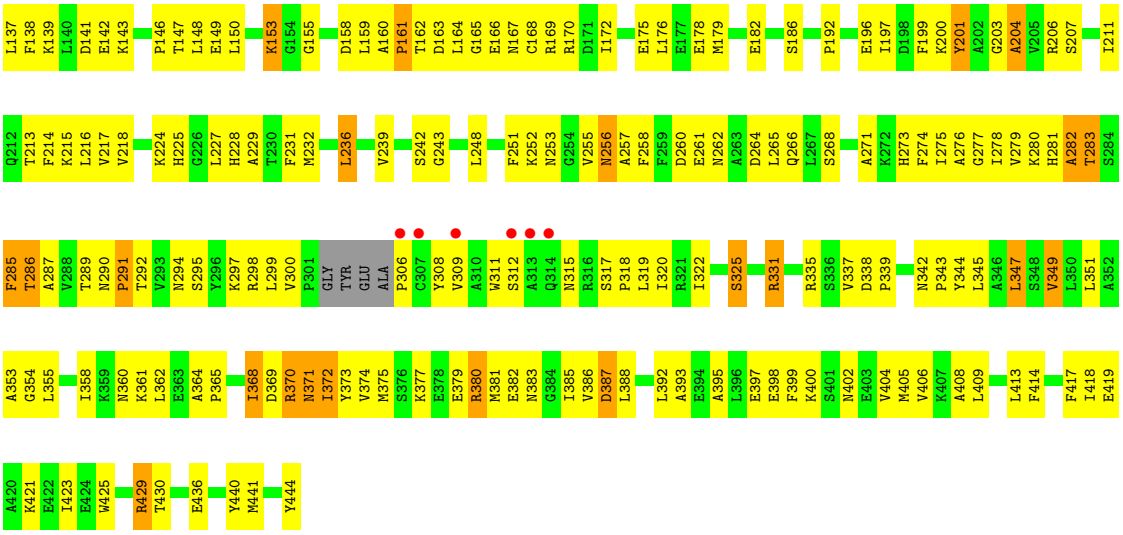
Chain A:



• Molecule 1: Glutamine synthetase

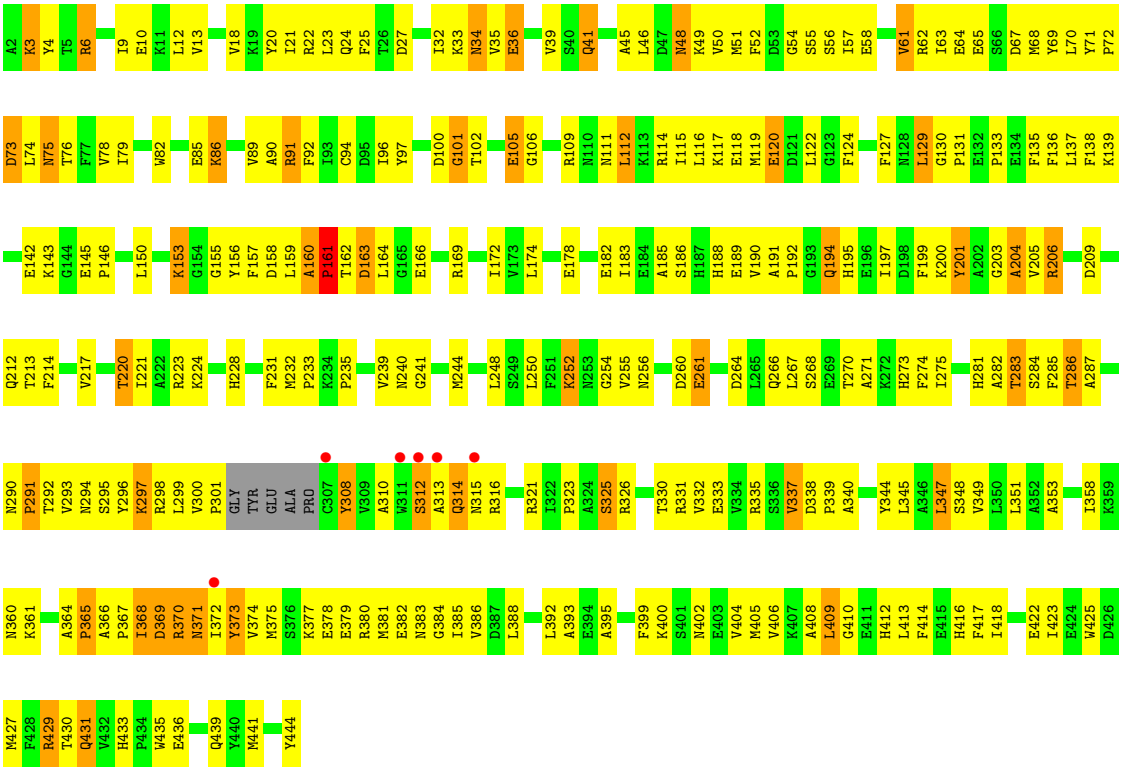
Chain B:





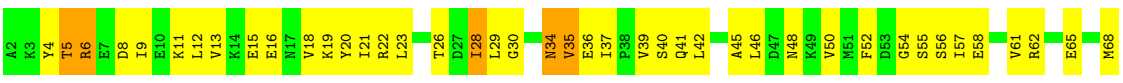
• Molecule 1: Glutamine synthetase

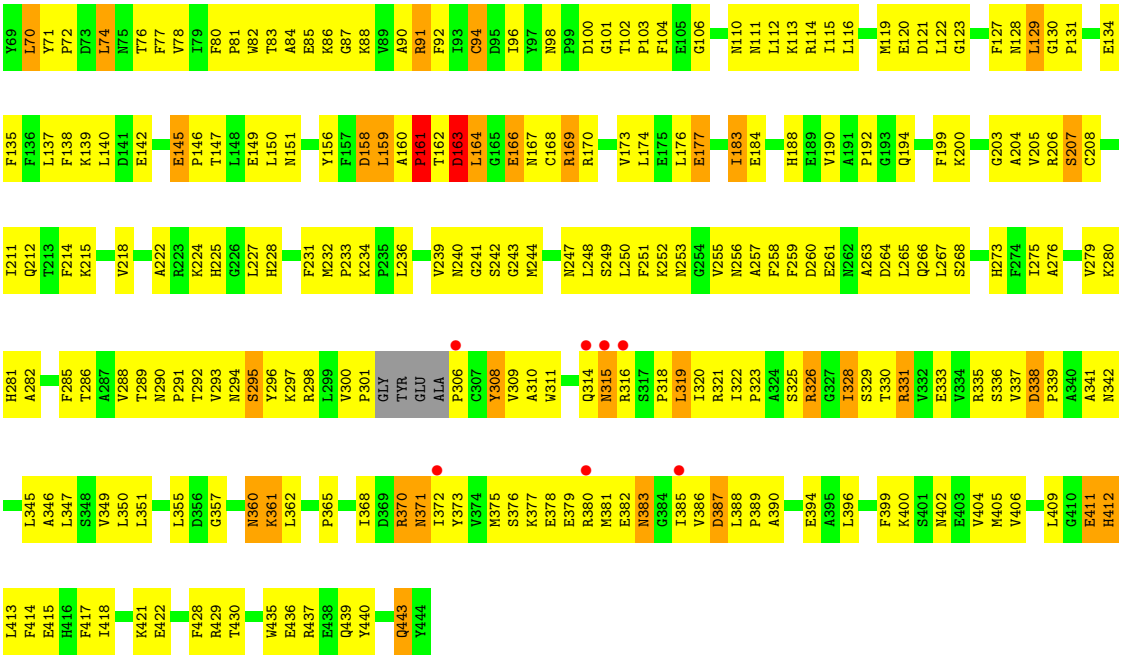
Chain C:



• Molecule 1: Glutamine synthetase

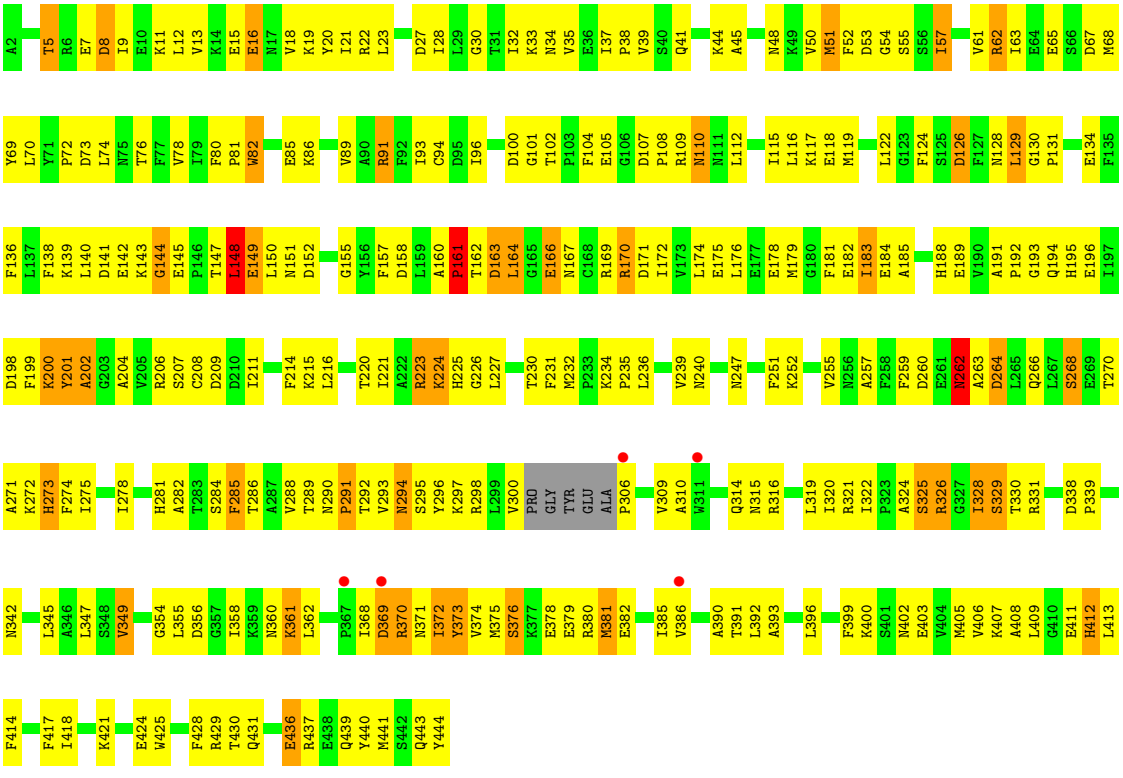
Chain D:





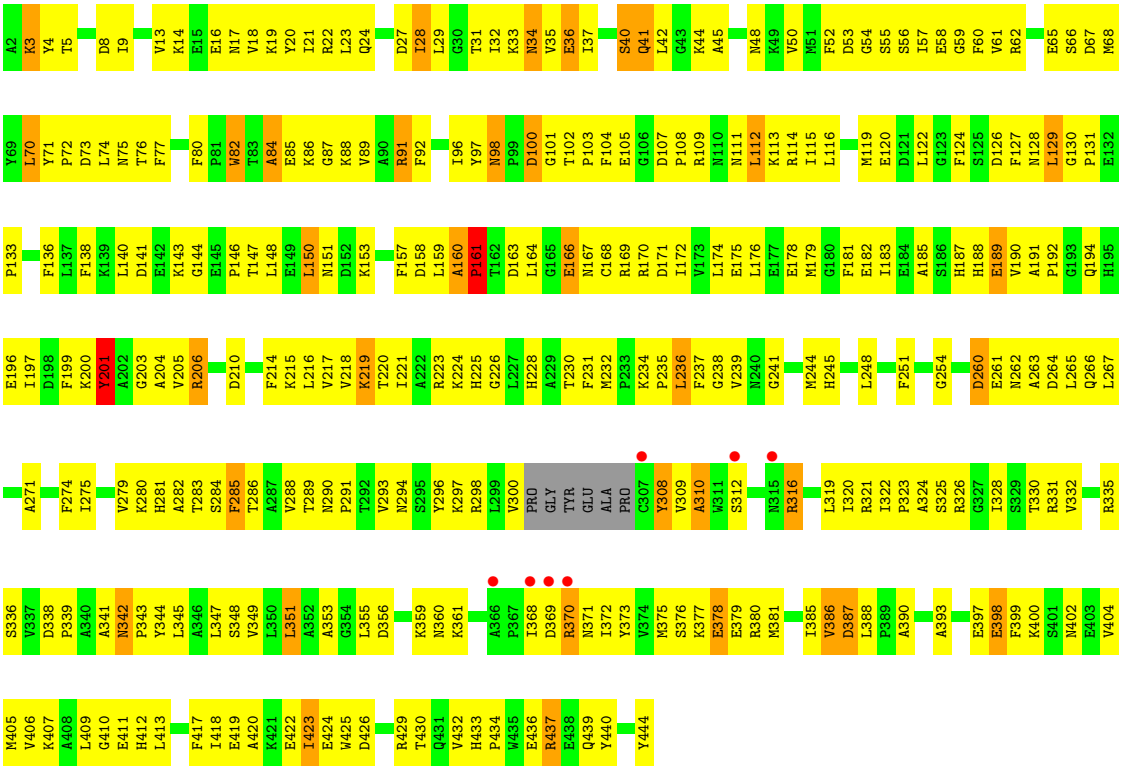
• Molecule 1: Glutamine synthetase

Chain E:



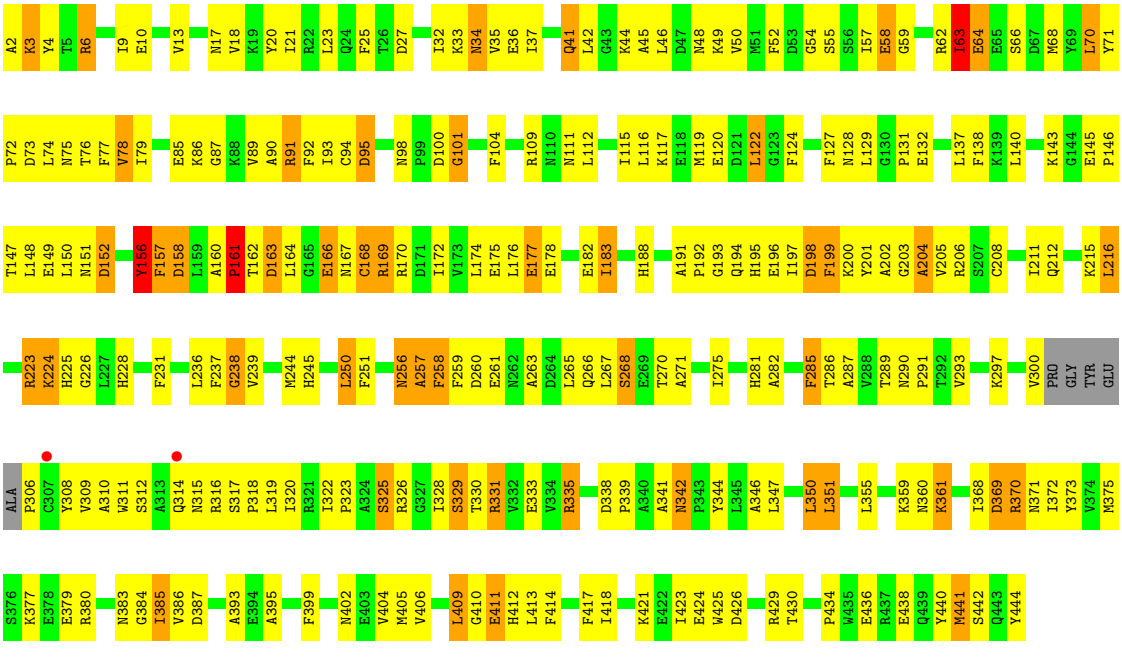
• Molecule 1: Glutamine synthetase

Chain F:



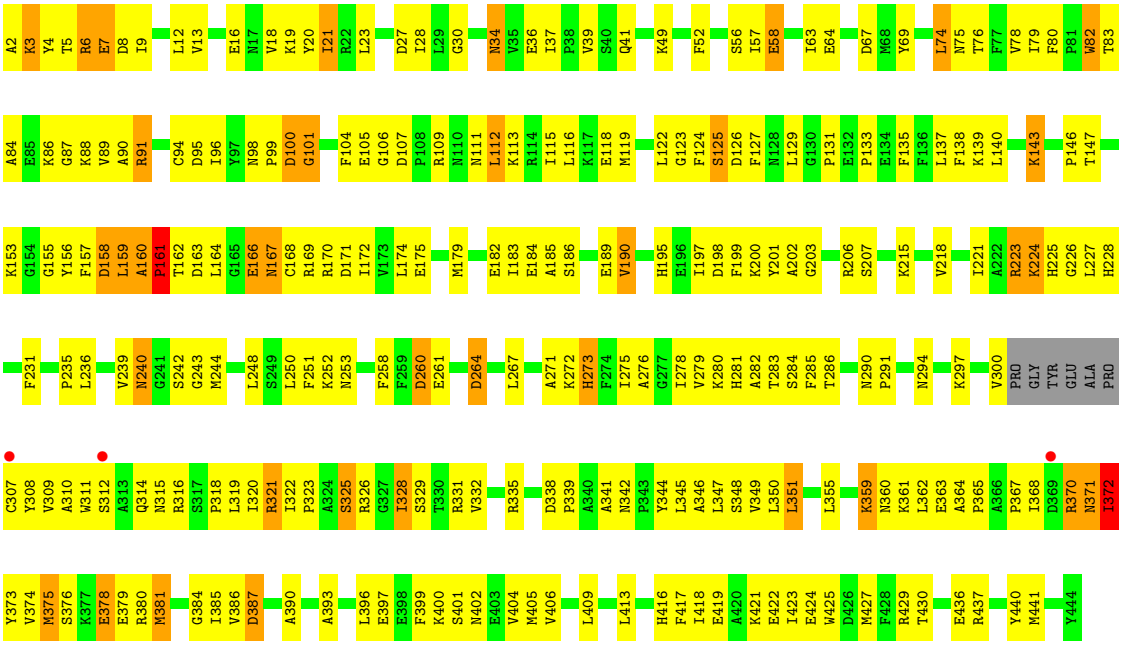
• Molecule 1: Glutamine synthetase

Chain G:



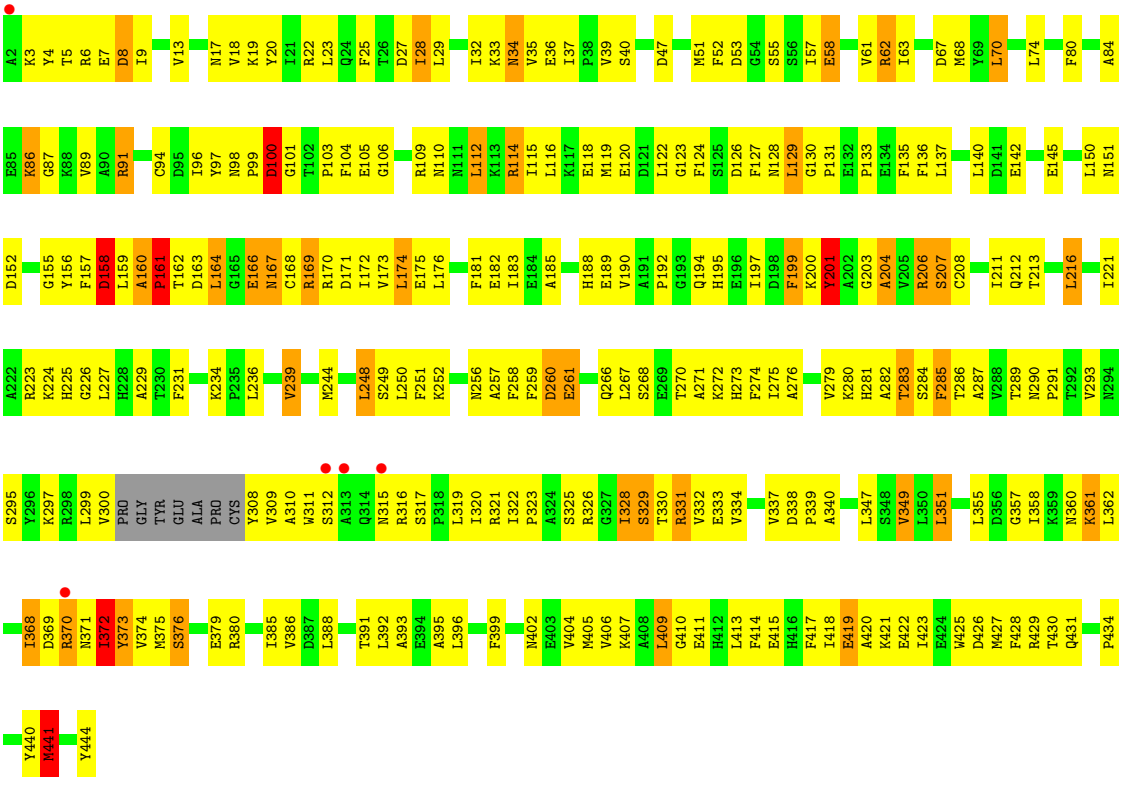
• Molecule 1: Glutamine synthetase

Chain H:



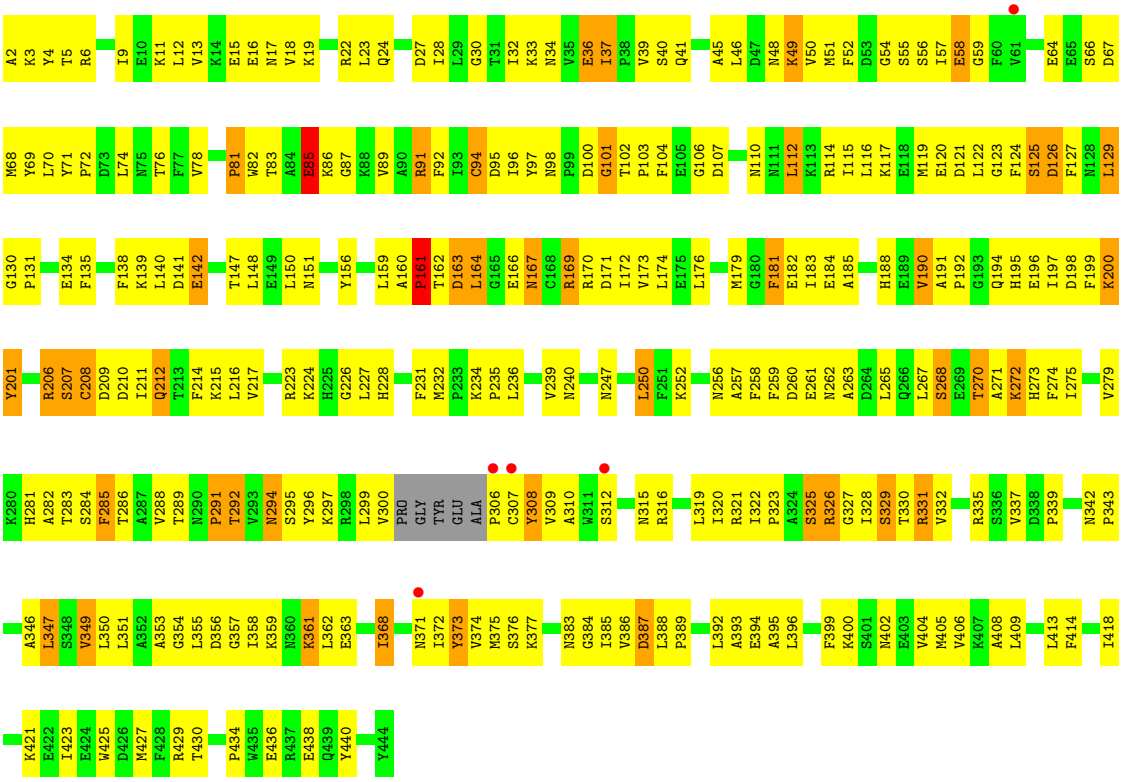
• Molecule 1: Glutamine synthetase

Chain I:



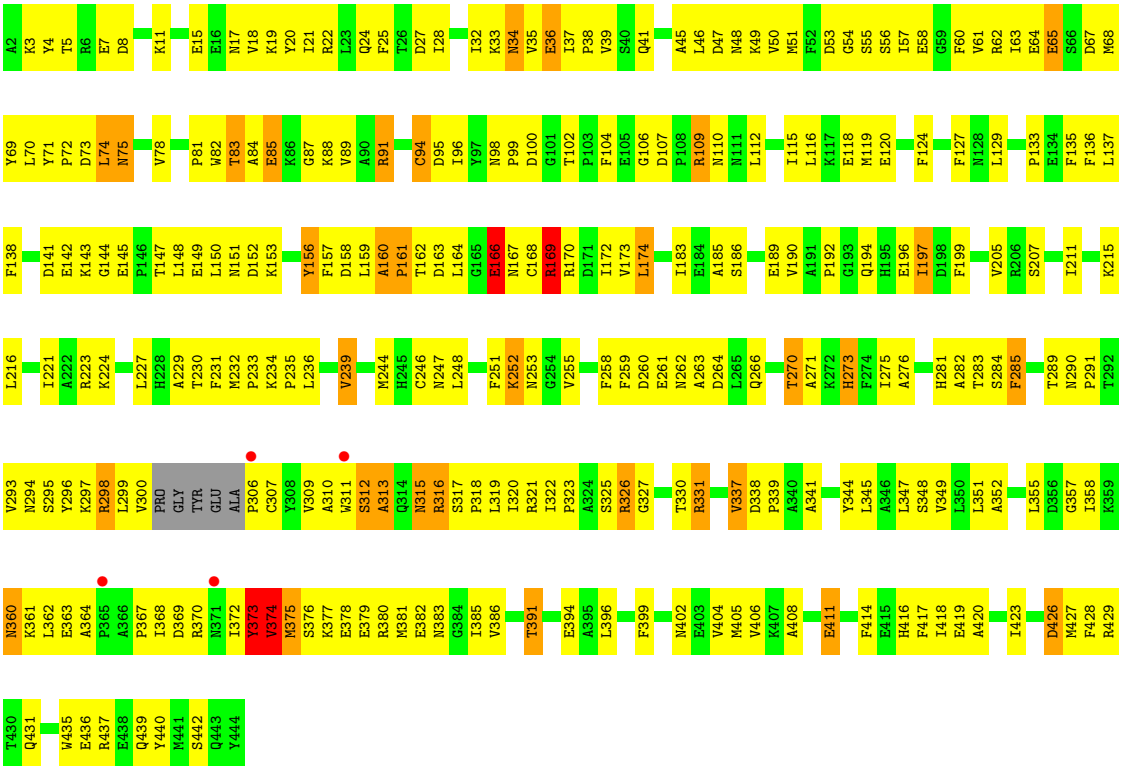
• Molecule 1: Glutamine synthetase

Chain J:



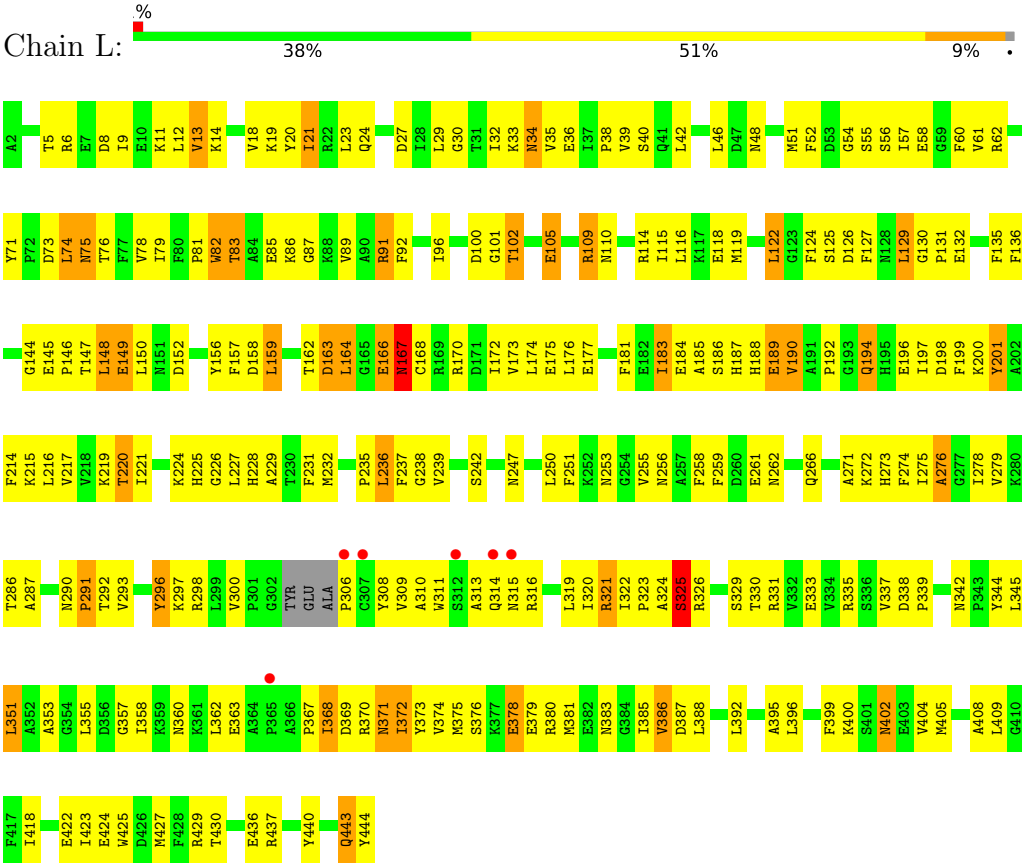
• Molecule 1: Glutamine synthetase

Chain K:



• Molecule 1: Glutamine synthetase

Chain L:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	109.99Å 138.38Å 138.74Å 119.80° 90.19° 93.85°	Depositor
Resolution (Å)	84.25 – 3.10 84.25 – 3.10	Depositor EDS
% Data completeness (in resolution range)	85.7 (84.25-3.10) 84.4 (84.25-3.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.49 (at 3.13Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.217 , 0.267 0.217 , 0.267	Depositor DCC
R_{free} test set	8289 reflections (7.53%)	wwPDB-VP
Wilson B-factor (Å^2)	70.3	Xtriage
Anisotropy	0.300	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 41.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.327 for -h,-k-l,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	42284	wwPDB-VP
Average B, all atoms (Å^2)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.18% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	0.39	0/3586	0.61	0/4849
1	B	0.40	0/3586	0.62	0/4849
1	C	0.42	0/3578	0.62	0/4838
1	D	0.41	0/3586	0.61	0/4849
1	E	0.41	0/3578	0.60	0/4837
1	F	0.43	0/3570	0.62	0/4826
1	G	0.41	0/3578	0.61	0/4837
1	H	0.41	0/3570	0.62	0/4826
1	I	0.42	0/3564	0.63	0/4818
1	J	0.43	0/3578	0.63	1/4837 (0.0%)
1	K	0.39	0/3578	0.61	0/4837
1	L	0.42	0/3590	0.63	0/4854
All	All	0.41	0/42942	0.62	1/58057 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	L	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	J	2	ALA	CA-C-N	-6.09	103.80	117.20

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	L	296	TYR	Sidechain

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	3505	0	3443	310	0
1	B	3505	0	3443	285	0
1	C	3498	0	3435	295	0
1	D	3505	0	3443	308	0
1	E	3498	0	3436	329	0
1	F	3491	0	3428	342	0
1	G	3498	0	3436	303	0
1	H	3491	0	3428	294	0
1	I	3485	0	3423	298	0
1	J	3498	0	3436	318	0
1	K	3498	0	3436	314	0
1	L	3509	0	3446	301	0
2	A	2	0	0	0	0
2	B	3	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
2	G	2	0	0	0	0
2	H	2	0	0	0	0
2	I	2	0	0	0	0
2	J	2	0	0	0	0
2	K	2	0	0	0	0
2	L	2	0	0	0	0
3	D	10	0	0	0	0
3	E	5	0	0	0	0
3	F	5	0	0	0	0
3	H	5	0	0	0	0
4	A	17	0	0	4	0
4	B	27	0	0	1	0
4	C	28	0	0	1	0
4	D	20	0	0	3	0
4	E	17	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	F	24	0	0	1	0
4	G	21	0	0	4	0
4	H	20	0	0	2	0
4	I	23	0	0	2	0
4	J	12	0	0	1	0
4	K	22	0	0	1	0
4	L	22	0	0	2	0
All	All	42284	0	41233	3435	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 41.

The worst 5 of 3435 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:K:83:THR:HG21	1:K:89:VAL:H	1.13	1.09
1:F:286:THR:HG23	1:F:290:ASN:HD22	1.19	1.07
1:I:173:VAL:HG13	1:I:183:ILE:HD12	1.31	1.07
1:I:372:ILE:HG22	1:I:385:ILE:HD13	1.37	1.05
1:G:371:ASN:HD22	1:G:375:MET:HB3	1.18	1.04

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	435/443 (98%)	358 (82%)	63 (14%)	14 (3%)	4 22
1	B	435/443 (98%)	367 (84%)	52 (12%)	16 (4%)	3 19
1	C	434/443 (98%)	341 (79%)	67 (15%)	26 (6%)	1 9
1	D	435/443 (98%)	347 (80%)	72 (17%)	16 (4%)	3 19

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	E	434/443 (98%)	344 (79%)	66 (15%)	24 (6%)	2 11
1	F	433/443 (98%)	345 (80%)	69 (16%)	19 (4%)	2 15
1	G	434/443 (98%)	353 (81%)	58 (13%)	23 (5%)	2 12
1	H	433/443 (98%)	356 (82%)	58 (13%)	19 (4%)	2 15
1	I	432/443 (98%)	364 (84%)	45 (10%)	23 (5%)	2 12
1	J	434/443 (98%)	342 (79%)	69 (16%)	23 (5%)	2 12
1	K	434/443 (98%)	356 (82%)	56 (13%)	22 (5%)	2 13
1	L	436/443 (98%)	346 (79%)	66 (15%)	24 (6%)	2 11
All	All	5209/5316 (98%)	4219 (81%)	741 (14%)	249 (5%)	2 14

5 of 249 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3	LYS
1	A	161	PRO
1	A	166	GLU
1	A	325	SER
1	A	411	GLU

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	380/382 (100%)	341 (90%)	39 (10%)	7 27
1	B	380/382 (100%)	353 (93%)	27 (7%)	14 44
1	C	379/382 (99%)	345 (91%)	34 (9%)	9 34
1	D	380/382 (100%)	347 (91%)	33 (9%)	10 36
1	E	379/382 (99%)	340 (90%)	39 (10%)	7 27
1	F	378/382 (99%)	338 (89%)	40 (11%)	6 26
1	G	379/382 (99%)	340 (90%)	39 (10%)	7 27
1	H	378/382 (99%)	344 (91%)	34 (9%)	9 34

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	I	377/382 (99%)	334 (89%)	43 (11%)	5 23
1	J	379/382 (99%)	338 (89%)	41 (11%)	6 25
1	K	379/382 (99%)	338 (89%)	41 (11%)	6 25
1	L	380/382 (100%)	347 (91%)	33 (9%)	10 36
All	All	4548/4584 (99%)	4105 (90%)	443 (10%)	8 30

5 of 443 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	198	ASP
1	I	8	ASP
1	L	363	GLU
1	K	360	ASN
1	G	258	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 170 such sidechains are listed below:

Mol	Chain	Res	Type
1	H	290	ASN
1	K	98	ASN
1	I	110	ASN
1	I	439	GLN
1	K	290	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 30 ligands modelled in this entry, 25 are monoatomic - leaving 5 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	SO4	D	504	-	4,4,4	0.26	0	6,6,6	0.05	0
3	SO4	H	501	-	4,4,4	0.25	0	6,6,6	0.04	0
3	SO4	D	501	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	E	503	-	4,4,4	0.28	0	6,6,6	0.05	0
3	SO4	F	503	-	4,4,4	0.26	0	6,6,6	0.09	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

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

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	439/443 (99%)	-0.34	5 (1%)	80	64	38, 61, 115, 125	0
1	B	439/443 (99%)	-0.33	8 (1%)	68	47	34, 61, 114, 124	0
1	C	438/443 (98%)	-0.36	6 (1%)	75	56	30, 61, 114, 126	0
1	D	439/443 (99%)	-0.32	7 (1%)	72	51	38, 63, 116, 130	0
1	E	438/443 (98%)	-0.35	5 (1%)	80	64	39, 64, 118, 126	0
1	F	437/443 (98%)	-0.38	7 (1%)	72	51	40, 60, 114, 130	0
1	G	438/443 (98%)	-0.41	2 (0%)	91	81	35, 60, 116, 124	0
1	H	437/443 (98%)	-0.39	3 (0%)	87	75	35, 60, 115, 127	0
1	I	436/443 (98%)	-0.35	5 (1%)	80	64	39, 62, 118, 132	0
1	J	438/443 (98%)	-0.34	5 (1%)	80	64	40, 63, 118, 126	0
1	K	438/443 (98%)	-0.39	4 (0%)	84	69	39, 63, 116, 127	0
1	L	440/443 (99%)	-0.35	6 (1%)	75	56	32, 59, 116, 126	0
All	All	5257/5316 (98%)	-0.36	63 (1%)	79	61	30, 62, 116, 132	0

The worst 5 of 63 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	307	CYS	7.8
1	J	306	PRO	7.3
1	C	307	CYS	6.5
1	I	2	ALA	5.2
1	H	312	SER	4.9

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

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

6.3 Carbohydrates (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^{th} 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
2	MG	B	503	1/1	0.32	0.40	92,92,92,92	0
3	SO4	D	501	5/5	0.76	0.34	131,131,132,132	0
3	SO4	F	503	5/5	0.80	0.23	181,181,182,182	0
3	SO4	H	501	5/5	0.82	0.21	169,169,169,169	0
3	SO4	E	503	5/5	0.83	0.18	158,159,159,159	0
2	MG	F	501	1/1	0.87	0.19	32,32,32,32	0
2	MG	L	501	1/1	0.88	0.21	30,30,30,30	0
3	SO4	D	504	5/5	0.89	0.13	154,154,154,155	0
2	MG	F	502	1/1	0.91	0.14	22,22,22,22	0
2	MG	D	503	1/1	0.93	0.19	32,32,32,32	0
2	MG	E	501	1/1	0.93	0.23	22,22,22,22	0
2	MG	I	501	1/1	0.93	0.21	18,18,18,18	0
2	MG	E	502	1/1	0.94	0.13	39,39,39,39	0
2	MG	K	502	1/1	0.94	0.17	39,39,39,39	0
2	MG	J	501	1/1	0.95	0.19	30,30,30,30	0
2	MG	H	502	1/1	0.95	0.21	16,16,16,16	0
2	MG	K	501	1/1	0.96	0.19	13,13,13,13	0
2	MG	H	503	1/1	0.96	0.20	35,35,35,35	0
2	MG	G	502	1/1	0.96	0.22	19,19,19,19	0
2	MG	A	502	1/1	0.96	0.16	19,19,19,19	0
2	MG	G	501	1/1	0.97	0.17	24,24,24,24	0
2	MG	I	502	1/1	0.97	0.16	39,39,39,39	0
2	MG	C	501	1/1	0.97	0.22	27,27,27,27	0
2	MG	J	502	1/1	0.97	0.34	27,27,27,27	0
2	MG	B	502	1/1	0.97	0.18	23,23,23,23	0
2	MG	A	501	1/1	0.97	0.16	10,10,10,10	0
2	MG	L	502	1/1	0.98	0.19	29,29,29,29	0
2	MG	C	502	1/1	0.98	0.27	34,34,34,34	0
2	MG	B	501	1/1	0.99	0.20	21,21,21,21	0
2	MG	D	502	1/1	0.99	0.18	7,7,7,7	0

6.5 Other polymers (i)

There are no such residues in this entry.