



wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 27, 2024 – 04:50 PM EDT

PDB ID : 1CX8
Title : CRYSTAL STRUCTURE OF THE ECTODOMAIN OF HUMAN TRANS-FERRIN RECEPTOR
Authors : Lawrence, C.M.; Ray, S.; Babyonyshev, M.; Galluser, R.; Borhani, D.; Harrison, S.C.
Deposited on : 1999-08-28
Resolution : 3.20 Å(reported)

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

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A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

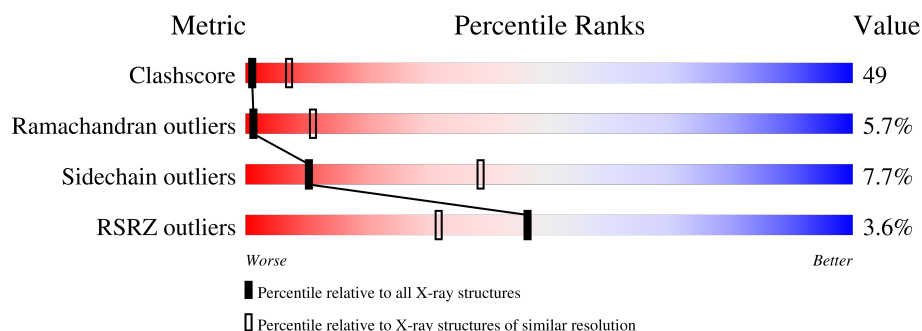
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 Å.

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





Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	180529	1497 (3.20-3.20)
Ramachandran outliers	177936	1479 (3.20-3.20)
Sidechain outliers	177891	1478 (3.20-3.20)
RSRZ outliers	164620	1371 (3.20-3.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	639	<div> <div>3%</div> <div> <div>40%</div> <div>50%</div> <div>9%</div> </div> </div>
1	B	639	<div> <div>4%</div> <div> <div>39%</div> <div>51%</div> <div>9%</div> </div> </div>
1	C	639	<div> <div>4%</div> <div> <div>38%</div> <div>51%</div> <div>9%</div> </div> </div>
1	D	639	<div> <div>4%</div> <div> <div>40%</div> <div>50%</div> <div>9%</div> </div> </div>
1	E	639	<div> <div>4%</div> <div> <div>38%</div> <div>53%</div> <div>8%</div> </div> </div>
1	F	639	<div> <div>4%</div> <div> <div>38%</div> <div>53%</div> <div>9%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	G	639	
1	H	639	

2 Entry composition

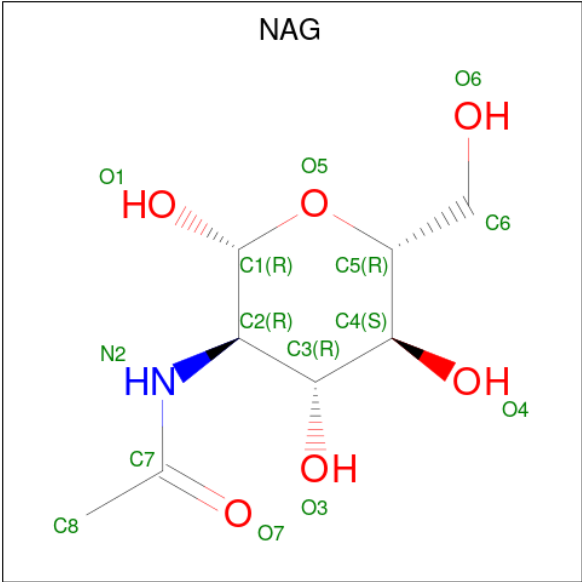
There are 3 unique types of molecules in this entry. The entry contains 40808 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 TRANSFERRIN RECEPTOR PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	B	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	C	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	D	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	E	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	F	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	G	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			
1	H	639	Total	C	N	O	S	0	0	0
			5056	3244	846	952	14			

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	C	1	Total	C	N	O	0	0
			14	8	1	5		
2	C	1	Total	C	N	O	0	0
			14	8	1	5		
2	C	1	Total	C	N	O	0	0
			14	8	1	5		
2	D	1	Total	C	N	O	0	0
			14	8	1	5		
2	D	1	Total	C	N	O	0	0
			14	8	1	5		
2	D	1	Total	C	N	O	0	0
			14	8	1	5		
2	E	1	Total	C	N	O	0	0
			14	8	1	5		
2	E	1	Total	C	N	O	0	0
			14	8	1	5		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	E	1	Total	C	N	O	0	0
			14	8	1	5		
2	F	1	Total	C	N	O	0	0
			14	8	1	5		
2	F	1	Total	C	N	O	0	0
			14	8	1	5		
2	F	1	Total	C	N	O	0	0
			14	8	1	5		
2	G	1	Total	C	N	O	0	0
			14	8	1	5		
2	G	1	Total	C	N	O	0	0
			14	8	1	5		
2	G	1	Total	C	N	O	0	0
			14	8	1	5		
2	H	1	Total	C	N	O	0	0
			14	8	1	5		
2	H	1	Total	C	N	O	0	0
			14	8	1	5		
2	H	1	Total	C	N	O	0	0
			14	8	1	5		

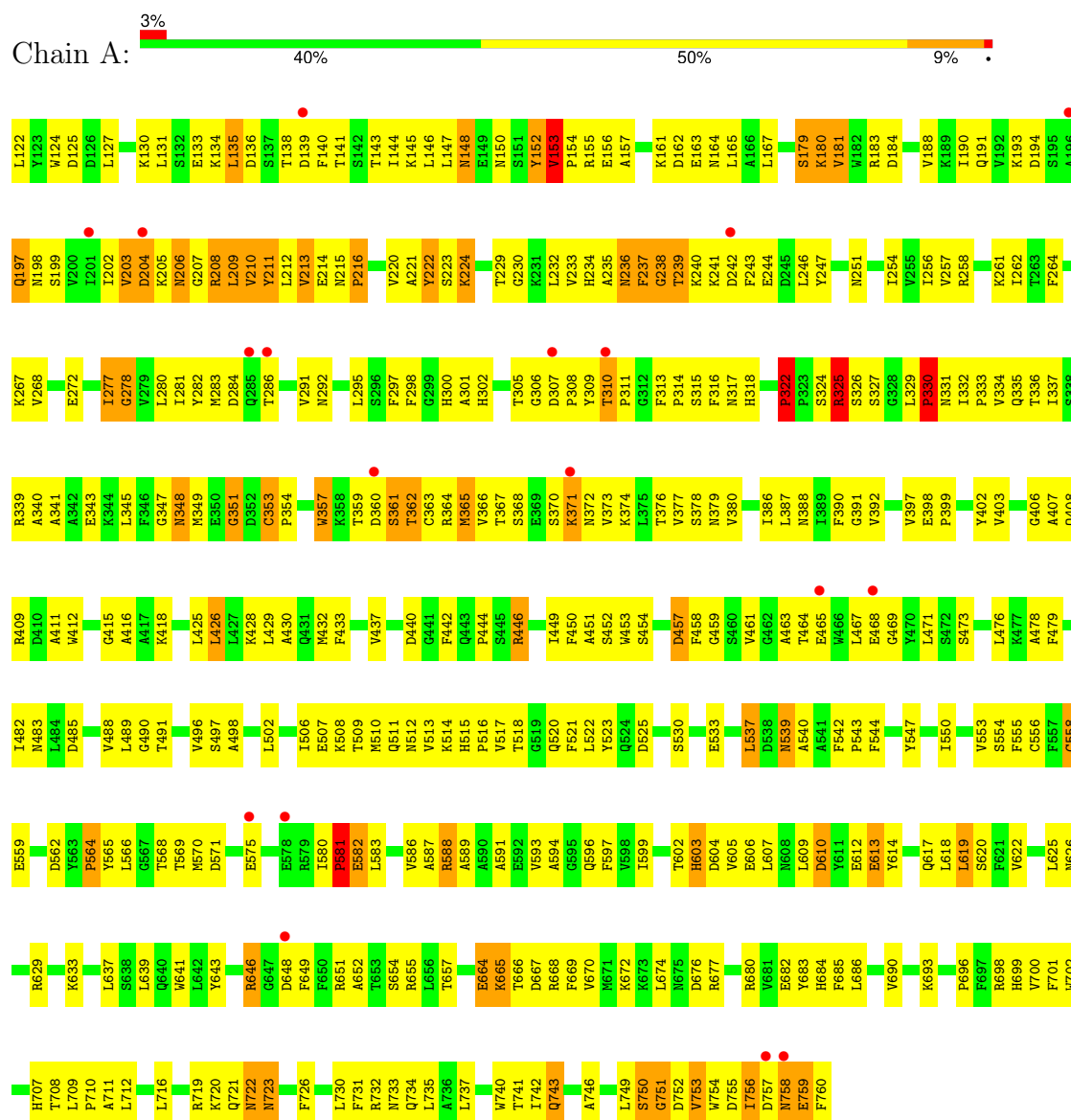
- Molecule 3 is SAMARIUM (III) ION (three-letter code: Sm) (formula: Sm).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	3	Total	Sm	0	0
			3	3		
3	B	3	Total	Sm	0	0
			3	3		
3	C	3	Total	Sm	0	0
			3	3		
3	D	3	Total	Sm	0	0
			3	3		
3	E	3	Total	Sm	0	0
			3	3		
3	F	3	Total	Sm	0	0
			3	3		
3	G	3	Total	Sm	0	0
			3	3		
3	H	3	Total	Sm	0	0
			3	3		

3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

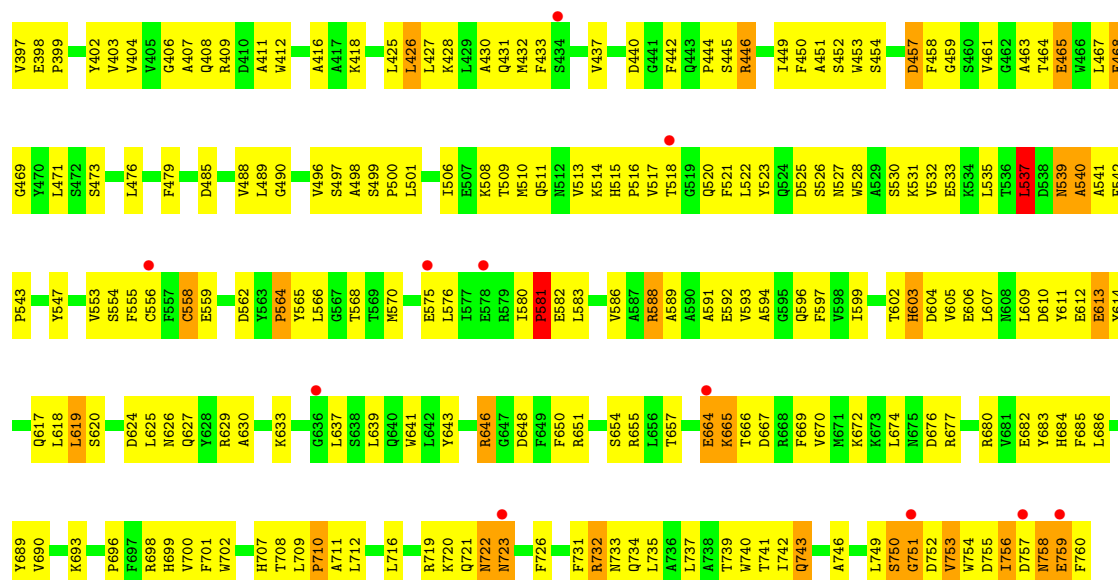
• Molecule 1: TRANSFERRIN RECEPTOR PROTEIN



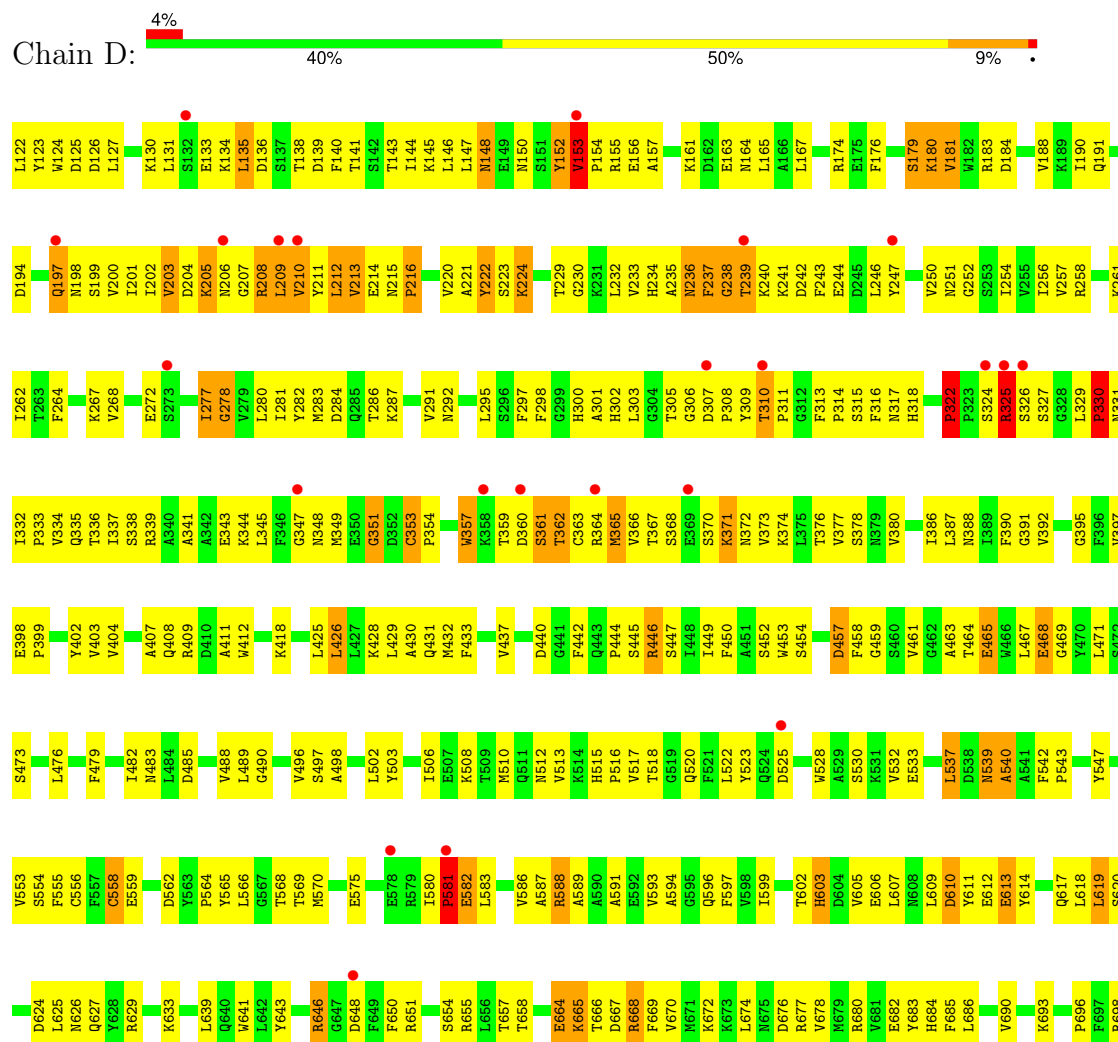
• Molecule 1: TRANSFERRIN RECEPTOR PROTEIN





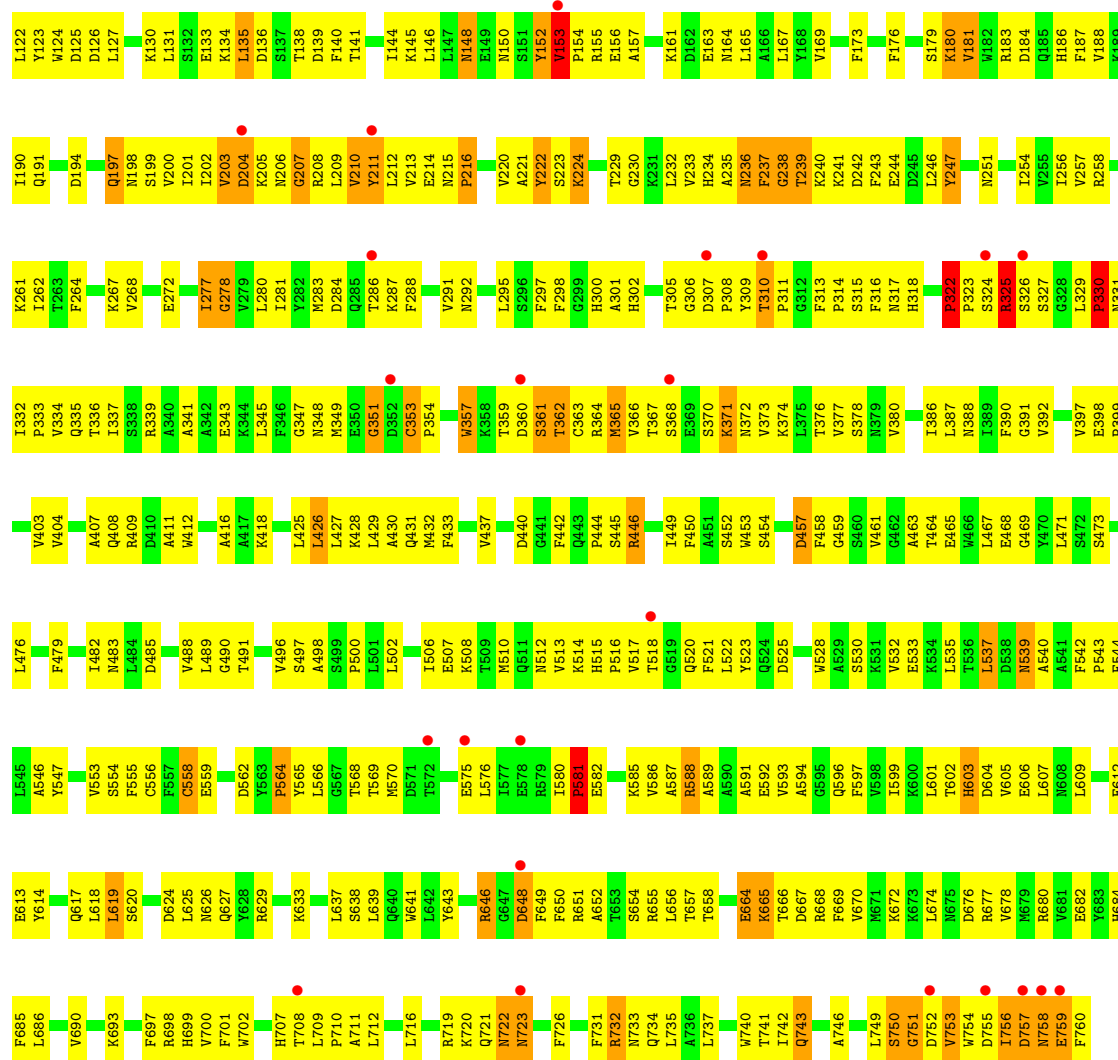


• Molecule 1: TRANSFERRIN RECEPTOR PROTEIN

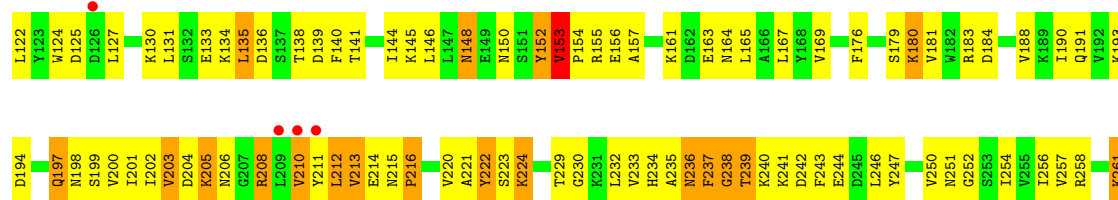




● Molecule 1: TRANSFERRIN RECEPTOR PROTEIN



● Molecule 1: TRANSFERRIN RECEPTOR PROTEIN



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	105.40Å 216.90Å 361.90Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 3.20 8.00 – 3.20	Depositor EDS
% Data completeness (in resolution range)	79.2 (8.00-3.20) 73.7 (8.00-3.20)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.83 (at 3.19Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.243 , 0.284 0.268 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	91.6	Xtriage
Anisotropy	0.149	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 65.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	40808	wwPDB-VP
Average B, all atoms (Å ²)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.34% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.38	0/5177	0.61	1/7021 (0.0%)
1	B	0.37	0/5177	0.61	1/7021 (0.0%)
1	C	0.40	0/5177	0.64	3/7021 (0.0%)
1	D	0.40	0/5177	0.64	4/7021 (0.1%)
1	E	0.38	0/5177	0.62	1/7021 (0.0%)
1	F	0.38	0/5177	0.63	2/7021 (0.0%)
1	G	0.37	0/5177	0.61	1/7021 (0.0%)
1	H	0.38	0/5177	0.61	1/7021 (0.0%)
All	All	0.38	0/41416	0.62	14/56168 (0.0%)

There are no bond length outliers.

The worst 5 of 14 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	468	GLU	OE1-CD-OE2	-6.58	115.40	123.30
1	C	468	GLU	OE1-CD-OE2	-6.33	115.71	123.30
1	D	212	LEU	N-CA-C	-6.05	94.65	111.00
1	D	465	GLU	OE1-CD-OE2	-5.78	116.36	123.30
1	C	465	GLU	OE1-CD-OE2	-5.61	116.57	123.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5056	0	4978	501	0
1	B	5056	0	4978	502	0
1	C	5056	0	4978	519	0
1	D	5056	0	4978	512	0
1	E	5056	0	4978	516	0
1	F	5056	0	4978	510	0
1	G	5056	0	4977	536	0
1	H	5056	0	4978	507	0
2	A	42	0	39	3	0
2	B	42	0	39	3	0
2	C	42	0	39	2	0
2	D	42	0	39	2	0
2	E	42	0	39	1	0
2	F	42	0	39	1	0
2	G	42	0	39	2	0
2	H	42	0	39	1	0
3	A	3	0	0	0	0
3	B	3	0	0	0	0
3	C	3	0	0	0	0
3	D	3	0	0	0	0
3	E	3	0	0	0	0
3	F	3	0	0	0	0
3	G	3	0	0	0	0
3	H	3	0	0	0	0
All	All	40808	0	40135	3954	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 49.

The worst 5 of 3954 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:F:201:ILE:HD13	1:F:212:LEU:HA	1.21	1.18
1:G:153:VAL:HG13	1:G:154:PRO:HD3	1.22	1.16
1:F:153:VAL:HG13	1:F:154:PRO:HD3	1.17	1.14
1:E:203:VAL:HA	1:E:209:LEU:HB3	1.23	1.13
1:D:153:VAL:HG13	1:D:154:PRO:HD3	1.17	1.11

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	637/639 (100%)	498 (78%)	101 (16%)	38 (6%)	1	10
1	B	637/639 (100%)	498 (78%)	100 (16%)	39 (6%)	1	9
1	C	637/639 (100%)	498 (78%)	103 (16%)	36 (6%)	1	11
1	D	637/639 (100%)	496 (78%)	106 (17%)	35 (6%)	1	11
1	E	637/639 (100%)	498 (78%)	102 (16%)	37 (6%)	1	10
1	F	637/639 (100%)	498 (78%)	105 (16%)	34 (5%)	1	12
1	G	637/639 (100%)	498 (78%)	101 (16%)	38 (6%)	1	10
1	H	637/639 (100%)	496 (78%)	108 (17%)	33 (5%)	1	12
All	All	5096/5112 (100%)	3980 (78%)	826 (16%)	290 (6%)	1	11

5 of 290 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	206	ASN
1	A	210	VAL
1	A	251	ASN
1	A	330	PRO
1	A	361	SER

5.3.2 Protein sidechains

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	548/548 (100%)	505 (92%)	43 (8%)	10	38

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	548/548 (100%)	507 (92%)	41 (8%)	11	40
1	C	548/548 (100%)	503 (92%)	45 (8%)	9	36
1	D	548/548 (100%)	504 (92%)	44 (8%)	10	37
1	E	548/548 (100%)	508 (93%)	40 (7%)	11	41
1	F	548/548 (100%)	505 (92%)	43 (8%)	10	38
1	G	548/548 (100%)	505 (92%)	43 (8%)	10	38
1	H	548/548 (100%)	508 (93%)	40 (7%)	11	41
All	All	4384/4384 (100%)	4045 (92%)	339 (8%)	10	39

5 of 339 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	357	TRP
1	G	603	HIS
1	F	525	ASP
1	G	153	VAL
1	H	135	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 146 such sidechains are listed below:

Mol	Chain	Res	Type
1	G	275	ASN
1	H	699	HIS
1	G	512	ASN
1	G	758	ASN
1	C	603	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 48 ligands modelled in this entry, 24 are monoatomic - leaving 24 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	$\# Z > 2$
2	NAG	H	761	1	14,14,15	0.76	0	17,19,21	0.57	0
2	NAG	H	762	1	14,14,15	0.60	0	17,19,21	0.69	0
2	NAG	C	763	1	14,14,15	0.57	0	17,19,21	0.82	1 (5%)
2	NAG	F	763	1	14,14,15	0.56	0	17,19,21	0.80	1 (5%)
2	NAG	G	761	1	14,14,15	0.78	0	17,19,21	0.56	0
2	NAG	A	762	1	14,14,15	0.61	0	17,19,21	0.68	0
2	NAG	B	761	1	14,14,15	0.70	0	17,19,21	0.57	0
2	NAG	E	763	1	14,14,15	0.62	0	17,19,21	0.80	1 (5%)
2	NAG	G	762	1	14,14,15	0.60	0	17,19,21	0.69	0
2	NAG	F	761	1	14,14,15	0.69	0	17,19,21	0.54	0
2	NAG	C	761	1	14,14,15	0.66	0	17,19,21	0.57	0
2	NAG	D	761	1	14,14,15	0.74	0	17,19,21	0.53	0
2	NAG	F	762	1	14,14,15	0.60	0	17,19,21	0.67	0
2	NAG	C	762	1	14,14,15	0.61	0	17,19,21	0.69	0
2	NAG	A	763	1	14,14,15	0.53	0	17,19,21	0.78	1 (5%)
2	NAG	E	762	1	14,14,15	0.62	0	17,19,21	0.73	0
2	NAG	E	761	1	14,14,15	0.79	0	17,19,21	0.56	0
2	NAG	B	763	1	14,14,15	0.55	0	17,19,21	0.78	1 (5%)
2	NAG	D	762	1	14,14,15	0.57	0	17,19,21	0.67	0
2	NAG	A	761	1	14,14,15	0.72	0	17,19,21	0.57	0
2	NAG	H	763	1	14,14,15	0.66	0	17,19,21	0.79	1 (5%)
2	NAG	G	763	1	14,14,15	0.52	0	17,19,21	0.74	1 (5%)
2	NAG	B	762	1	14,14,15	0.60	0	17,19,21	0.64	0
2	NAG	D	763	1	14,14,15	0.57	0	17,19,21	0.74	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	H	761	1	-	2/6/23/26	0/1/1/1
2	NAG	H	762	1	-	2/6/23/26	0/1/1/1
2	NAG	C	763	1	-	2/6/23/26	0/1/1/1
2	NAG	F	763	1	-	2/6/23/26	0/1/1/1
2	NAG	G	761	1	-	2/6/23/26	0/1/1/1
2	NAG	A	762	1	-	2/6/23/26	0/1/1/1
2	NAG	B	761	1	-	2/6/23/26	0/1/1/1
2	NAG	E	763	1	-	2/6/23/26	0/1/1/1
2	NAG	G	762	1	-	2/6/23/26	0/1/1/1
2	NAG	F	761	1	-	1/6/23/26	0/1/1/1
2	NAG	C	761	1	-	2/6/23/26	0/1/1/1
2	NAG	D	761	1	-	2/6/23/26	0/1/1/1
2	NAG	F	762	1	-	2/6/23/26	0/1/1/1
2	NAG	C	762	1	-	2/6/23/26	0/1/1/1
2	NAG	A	763	1	-	2/6/23/26	0/1/1/1
2	NAG	E	762	1	-	2/6/23/26	0/1/1/1
2	NAG	E	761	1	-	2/6/23/26	0/1/1/1
2	NAG	B	763	1	-	3/6/23/26	0/1/1/1
2	NAG	D	762	1	-	2/6/23/26	0/1/1/1
2	NAG	A	761	1	-	2/6/23/26	0/1/1/1
2	NAG	H	763	1	-	2/6/23/26	0/1/1/1
2	NAG	G	763	1	-	2/6/23/26	0/1/1/1
2	NAG	B	762	1	-	2/6/23/26	0/1/1/1
2	NAG	D	763	1	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	763	NAG	C2-N2-C7	-2.50	119.55	122.90
2	A	763	NAG	C2-N2-C7	-2.44	119.62	122.90
2	B	763	NAG	C2-N2-C7	-2.37	119.73	122.90
2	E	763	NAG	C2-N2-C7	-2.31	119.80	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	763	NAG	C2-N2-C7	-2.28	119.84	122.90

There are no chirality outliers.

5 of 49 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	762	NAG	O5-C5-C6-O6
2	B	762	NAG	O5-C5-C6-O6
2	C	762	NAG	O5-C5-C6-O6
2	D	762	NAG	O5-C5-C6-O6
2	E	762	NAG	O5-C5-C6-O6

There are no ring outliers.

13 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	761	NAG	1	0
2	G	761	NAG	1	0
2	A	762	NAG	2	0
2	B	761	NAG	1	0
2	G	762	NAG	1	0
2	F	761	NAG	1	0
2	C	761	NAG	1	0
2	D	761	NAG	1	0
2	C	762	NAG	1	0
2	E	762	NAG	1	0
2	D	762	NAG	1	0
2	A	761	NAG	1	0
2	B	762	NAG	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

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

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ > 2			OWAB(Å ²)	Q < 0.9
1	A	639/639 (100%)	0.04	18 (2%)	55	39	32, 79, 98, 99	0
1	B	639/639 (100%)	-0.00	24 (3%)	44	30	24, 72, 98, 99	0
1	C	639/639 (100%)	0.00	26 (4%)	42	28	20, 58, 91, 99	0
1	D	639/639 (100%)	-0.05	28 (4%)	39	27	17, 58, 96, 99	0
1	E	639/639 (100%)	-0.02	23 (3%)	46	32	19, 67, 98, 99	0
1	F	639/639 (100%)	-0.06	23 (3%)	46	32	20, 65, 95, 99	0
1	G	639/639 (100%)	-0.01	20 (3%)	51	36	25, 79, 98, 99	0
1	H	639/639 (100%)	0.08	21 (3%)	49	34	32, 84, 98, 99	0
All	All	5112/5112 (100%)	-0.00	183 (3%)	46	32	17, 70, 98, 99	0

The worst 5 of 183 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	307	ASP	10.9
1	F	307	ASP	7.7
1	D	307	ASP	7.5
1	E	757	ASP	7.1
1	A	307	ASP	7.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	NAG	E	761	14/15	0.12	0.18	91,98,98,98	0
2	NAG	G	761	14/15	0.26	0.19	94,98,98,98	0
2	NAG	A	761	14/15	0.28	0.17	93,98,98,98	0
2	NAG	F	761	14/15	0.38	0.14	78,98,98,98	0
2	NAG	B	761	14/15	0.42	0.16	92,98,98,98	0
2	NAG	C	761	14/15	0.49	0.13	95,98,98,98	0
2	NAG	D	761	14/15	0.60	0.10	95,98,98,98	0
2	NAG	H	763	14/15	0.65	0.13	85,98,98,98	0
3	SM	B	764	1/1	0.68	0.30	2,2,2,2	0
3	SM	A	765	1/1	0.72	0.27	2,2,2,2	0
3	SM	G	766	1/1	0.74	0.28	56,56,56,56	0
2	NAG	B	763	14/15	0.75	0.10	90,98,98,98	0
2	NAG	H	761	14/15	0.75	0.15	97,98,98,98	0
2	NAG	A	763	14/15	0.77	0.12	91,98,98,98	0
2	NAG	E	763	14/15	0.78	0.10	70,78,82,84	0
3	SM	A	766	1/1	0.78	0.38	34,34,34,34	0
2	NAG	G	763	14/15	0.80	0.10	92,96,98,98	0
3	SM	B	765	1/1	0.81	0.24	2,2,2,2	0
2	NAG	F	763	14/15	0.82	0.09	81,87,92,92	0
2	NAG	G	762	14/15	0.82	0.11	80,91,96,98	0
3	SM	H	766	1/1	0.82	0.32	54,54,54,54	0
3	SM	H	764	1/1	0.83	0.34	2,2,2,2	0
3	SM	B	766	1/1	0.84	0.29	45,45,45,45	0
2	NAG	C	762	14/15	0.85	0.10	46,69,81,81	0
2	NAG	H	762	14/15	0.85	0.10	89,97,98,98	0
3	SM	D	764	1/1	0.85	0.35	2,2,2,2	0
3	SM	E	766	1/1	0.86	0.32	2,2,2,2	0
2	NAG	D	762	14/15	0.86	0.09	62,81,93,94	0
2	NAG	D	763	14/15	0.86	0.11	68,83,91,94	0
3	SM	H	765	1/1	0.86	0.29	2,2,2,2	0
2	NAG	C	763	14/15	0.86	0.11	61,86,89,95	0
3	SM	E	764	1/1	0.87	0.35	2,2,2,2	0
3	SM	G	764	1/1	0.87	0.33	27,27,27,27	0
3	SM	C	764	1/1	0.88	0.30	2,2,2,2	0
2	NAG	A	762	14/15	0.88	0.10	76,93,98,98	0
2	NAG	B	762	14/15	0.88	0.13	66,87,98,98	0
3	SM	C	765	1/1	0.89	0.21	2,2,2,2	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	NAG	F	762	14/15	0.89	0.12	67,86,94,95	0
2	NAG	E	762	14/15	0.89	0.12	64,80,90,92	0
3	SM	F	764	1/1	0.90	0.38	2,2,2,2	0
3	SM	D	766	1/1	0.90	0.20	38,38,38,38	0
3	SM	F	766	1/1	0.92	0.19	56,56,56,56	0
3	SM	A	764	1/1	0.92	0.33	2,2,2,2	0
3	SM	F	765	1/1	0.92	0.23	2,2,2,2	0
3	SM	E	765	1/1	0.93	0.24	2,2,2,2	0
3	SM	D	765	1/1	0.94	0.23	2,2,2,2	0
3	SM	C	766	1/1	0.95	0.34	5,5,5,5	0
3	SM	G	765	1/1	0.95	0.33	2,2,2,2	0

6.5 Other polymers [i](#)

There are no such residues in this entry.