

Supplementary figure 1

#	Template	Alignment Coverage	3D Model	Confidence	% i.d.	Template Information
1	c7eebl_	Alignment		100.0	22	PDB header: protein transport Chain: L; PDB Molecule: kazal-like domain-containing protein; PDBTitle: structure of the catspermasome PDB Entry: PDBe RCSB PDBj
2	c6rw3D_	Alignment		99.9	18	PDB header: membrane protein Chain: D; PDB Molecule: hexose transporter 1; PDBTitle: the molecular basis for sugar import in malaria parasites. PDB Entry: PDBe RCSB PDBj
3	c7bp3A_	Alignment		99.8	19	PDB header: transport protein Chain: A; PDB Molecule: monocarboxylate transporter 2; PDBTitle: cryo-em structure of the human mct2 PDB Entry: PDBe RCSB PDBj
4	c6kkIA_	Alignment		99.9	20	PDB header: transport protein Chain: A; PDB Molecule: sugar efflux transporter; PDBTitle: crystal structure of drug:proton antiporter-1 (dha1) family sotb, in2 the inward conformation (h115n mutant) PDB Entry: PDBe RCSB PDBj
5	c7pmwA_	Alignment		99.2	14	PDB header: membrane protein Chain: A; PDB Molecule: solute carrier family 15 member 1; PDBTitle: hspept1 bound to ala-phe in the outward facing occluded conformation PDB Entry: PDBe RCSB PDBj
6	c7ckrA_	Alignment		99.9	19	PDB header: transport protein Chain: A; PDB Molecule: monocarboxylate transporter 1; PDBTitle: cryo-em structure of the human mct1/basigin-2 complex in the presence2 of anti-cancer drug candidate bay-8002 in the outward-open3 conformation. PDB Entry: PDBe RCSB PDBj
7	c6v4dA_	Alignment		99.9	17	PDB header: membrane protein Chain: A; PDB Molecule: vesicular glutamate transporter 2; PDBTitle: structure of the rat vesicular glutamate transporter 2 determined by2 single particle cryo-em PDB Entry: PDBe RCSB PDBj
8	c6e8JA_	Alignment		99.9	16	PDB header: transport protein Chain: A; PDB Molecule: major facilitator family transporter; PDBTitle: crystal structure of a bacterial homolog to human lysosomal2 transporter, spinster, in inward-facing and occupied conformation PDB Entry: PDBe RCSB PDBj
9	c6gs7A_	Alignment		99.9	16	PDB header: membrane protein Chain: A; PDB Molecule: dipeptide and tripeptide permease a; PDBTitle: crystal structure of peptide transporter dtpa-nanobody in glycine2 buffer PDB Entry: PDBe RCSB PDBj
10	c6g9xB_	Alignment		99.8	18	PDB header: membrane protein Chain: B; PDB Molecule: major facilitator superfamily mfs_1; PDBTitle: crystal structure of a mfs transporter at 2.54 angstrom resolution PDB Entry: PDBe RCSB PDBj
11	c4zc0A_	Alignment		99.9	18	PDB header: transport protein Chain: A; PDB Molecule: multidrug transporter m dfa; PDBTitle: crystal structure of e. coli multidrug transporter mdfa in complex2 with deoxycholate PDB Entry: PDBe RCSB PDBj

Supplementary Figure 2

