

Table 1. Clinicopathological and demographic information of CSF samples in this study.

CSF	Age at death	Sex	PMI (hrs)	McKeith Neocortical DLB	AD-Braak (tau)	Disease Duration (yrs)	Cognitive diagnosis at last known visit
DLB-I	64	M	4.3	Yes	4	4.7	Probable Lewy body dementia
DLB-II	69	M	Unk.	Yes	6	16.9	Dementia of questionable etiology
DLB-III	82	F	0.6	Yes	2	12	Alzheimer's disease
DLB-IV	84	M	17.3	Yes	5	5.4	Probable frontotemporal dementia
DLB-V	65	F	17.8	Yes	6	6.3	Dementia of questionable etiology
DLB-VI	74	F	2.3	Yes	2	6	Alzheimer's disease
DLB-VII	75	F	15.6	Yes	5	9	Probable Alzheimer's disease
DLB-VIII	79	F	9.3	Yes	5	5	Mild cognitive impairment
DLB-IX	83	M	3.0	Yes	1	2.6	Probable Alzheimer's disease
DLB-X	83	F	3.5	Yes	5	4.3	Possible Alzheimer's disease
CTRL	86	M	16.3	No	1	N/A	Normal cognition

PMI - post-mortem interval (hours); AD-Braak stages of abnormal tau pathology or neurofibrillary tangles (ranges 1 - 6); Disease duration is time (years) from dementia diagnosis to death.

Table 2. Cryo-EM data collection, processing, helical reconstruction, and atomic modeling.

Case (DLB)	I	II	III	IV	V	VI	VII	VIII	IX	X
Pixel size [Å]	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Defocus Range [µm]	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8	-2.5 to -0.8
Voltage [kV]	300	300	300	300	300	300	300	300	300	300
Exposure time [s per frame]	1	1	1	1	1	1	1	1	1	1
Number of frames	50	50	50	50	50	50	50	50	50	50
Total dose [e-/ Å ²]	55	55	55	55	55	55	55	55	55	55
Micrographs	3,603	1,835	2,607	3,688	1981	6,936	1,297	2,760	2,283	1,613
Box width [pixels]	256	1024/256	256	1024/256	256	256	256	256	256	256
Inter-box distance [pixels]	27	27	27	27	27	27	27	27	27	27
Initially extracted fragments	2,074,993	567,700	766,242	1,819,722	800,855	1,783,906	750,243	409,209	1,327,238	959,150
Segments after 2D classification	964,580	110,442	320,820	325,051	614,950	820,590	348,673	191,979	265,290	357,276

Reconstruction

Class	B	A	B	B	A	B	A	B	B	B	B	A	A	A	B	A
Type	II-II	I-I	I-II	I-I	I-I	II-II	I-I	I-II	II-II	I-I	II-II	I-I	I-I	I-I	I-I	I-I
Segments after 3D classification	61,809	38,064	28,733	14,789	17,607	70,598	16,174	164,382	68,361	54,731	9,296	31,490	6,561	22,381	14,212	12,129
Resolution after refinement [Å]	3.1	3.0	3.5	3.3	3.2	3.2	3.9	3.1	3.0	2.9	3.2	3.2	3.9	3.3	3.3	3.4
Final res. [Å]	3.0	3.0	3.5	3.1	3.0	3.2	3.7	3.1	3.0	2.9	3.0	3.0	3.8	3.1	3.2	3.2
Estimated map sharpening B-factor [Å ²]	-59	-66	-64	-50	-54	-66	-43	-96	-104	-79	-59	-59	-41	-64	-59	-41
Helical rise [Å]	4.84	4.84	4.84	2.41	4.83	4.84	4.84	4.84	4.84	2.42	4.84	4.84	4.84	4.84	4.84	4.84
Helical twist [°]	-0.77	-0.8	-0.72	179.63	-0.75	-0.79	-0.79	-0.71	-0.75	179.62	-0.79	-0.79	-0.7	-0.76	-0.82	-0.86

Atomic model

EMDB code	EMD-27083	EMD-27084	EMD-27085	EMD-27086	EMD-27087	refer to DLB-VII class B type II	refer to DLB-I class A type II	EMD-27088	refer to DLB-VII class B type II	EMD-27089	EMD-27090	EMD-27091	N/A	refer to DLB-VII class B type II	EMD-27092	EMD-27093
PDB code	8CYS	8CYT	8CYV	8CYW	8CYX			8CYY		8CZ0	8CZ1	8CZ2			8CZ3	8CZ6
FSC threshold	0.143	0.143	0.143	0.143	0.143			0.143		0.143	0.143	0.143			0.143	0.143
Composition - Chains - Atoms* - Residues	14 6958 1008	14 6958 1008	12 5964 864	12 5952 876	10 4900 730			12 5964 864		12 5964 864	12 5964 864	12 5964 864			12 5964 864	14 6958 1008
B-factors (Å ²) -Protein	42	33	60	70	42			60		84	60	76			34	67
R.M.S. deviations - Bond lengths (Å) - Bond angles (°)	0.003 0.623	0.001 0.409	0.002 0.548	0.006 1.096	0.007 1.132			0.005 0.955		0.002 0.502	0.002 0.482	0.002 0.479			0.005 0.652	0.005 0.867
Validation - MolProbity score - Clashscore - Poor rotamers (%)	1.60 5.43 0.00	1.69 2.78 2.00	2.24 2.68 11.0	1.87 4.42 0.00	2.05 12.07 0.00			0.92 0.49 0.00		1.32 2.36 0.33	1.14 2.03 0.00	1.65 9.10 0.00			2.07 2.19 7.00	1.62 4.46 0.00
Ramachandran plot -Favored (%) -Allowed (%) -Disallowed (%)	95.59 4.41 0.00	94.12 5.88 0.00	94.12 5.88 0.00	85.51 14.49 0.00	92.75 7.25 0.00			96.32 3.68 0.00		95.59 4.41 0.00	97.06 2.94 0.00	97.06 2.94 0.00			93.38 6.62 0.00	94.12 5.88 0.00