
Supplementary information

**Structure and topography of the synaptic
V-ATPase–synaptophysin complex**

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Supplementary Information

Structure and Topography of the Synaptic V-ATPase–Synaptophysin Complex

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Table of contents

	Page
Supplementary Table 1 – List of wild-type ISV proteins identified by high-resolution mass-spectrometry with map cross-correlation scores. Separate Excel file (SupplementaryTable1.xlsx)	
Supplementary Table 2 – Identification of unique peptides of the V-ATPase subunit e2 from wild-type ISV samples.	3
Supplementary Table 3 – Root-mean square differences between V-ATPase structures.	3
Supplementary Table 4 – Copy numbers of intact V-ATPase assemblies per ISV.	3
Supplementary Table 5 – Copy numbers of V0-only V-ATPase assemblies per ISV.	4

Supplementary Table 2. Identification of unique peptides of the V-ATPase subunit e2 from wild-type ISV samples

Identified protein	Biological replicate	Score	Unique peptide ¹
ATP6V0E2	ISV-1	307.7	Y.VRFLWE.
	ISV-2	308.8	F.TTF.I
	ISV-3	303.7	F.TTF.W

¹The spectrum score uses Byonic's scoring algorithm.

Supplementary Table 3. Root-mean-square differences between V-ATPase structures

RMSD (Å)	V-ATPase	In wild-type ISVs			
		State 1	State 2	State 3	V0-only
In Syp^{-/-} ISVs	State 1	2.3			
	State 2		2.1		
	State 3			1	
	V0-only				1.7
PDB IDs of other State 2	6WM3		3.3		
	7U4T		3.8		
	6VQG		4		
	7UNF		4.1		

Structures were globally aligned by superimposing Cα atoms and root-mean-square differences (RMSDs) calculated for Cα atoms. State 2 was used for comparisons of wild-type intact V-ATPase with the other mammalian structures (PDB IDs: 6WM3, 7U4T, 6VQG, 7UNF) since the 7UNF deposition only includes State 2.

Supplementary Table 4. Copy numbers of intact V-ATPase assemblies

Intact V-ATPase copy number	Number of ISVs		Percentage ¹	
	wild-type	Syp ^{-/-}	wild-type	Syp ^{-/-}
0	2228	927		
1	945	688	71.3	47.4
2	290	419	21.9	28.8
3	72	218	5.4	15.0
4	15	79	1.1	5.4
5	4	28	0.3	1.9
6	0	11	0.0	0.8
7	0	6	0.0	0.4
8	0	4	0.0	0.3
Total examined number of ISVs	3554	2380		
Number of ISVs with at least one intact V-ATPase	1326	1453		

¹Normalized to the number ISVs with at least one intact V-ATPase

Supplementary Table 5. Copy numbers of V0-only V-ATPase assemblies

V0-only V-ATPase copy number	Number of ISVs		Percentage ¹	
	wildtype	Syp ^{-/-}	wild-type	Syp ^{-/-}
0	197	233		
1	86	130	81.1	69.1
2	18	46	17.0	24.5
3	2	11	1.9	5.9
4	0	1	0.0	0.5
Total examined number of ISVs	303	421		
Number of ISVs with at least one V0-only V-ATPase	106	188		

¹Normalized to the number ISVs with at least one V0-only V-ATPase.