

SUPPLEMENTARY TABLES

Supplementary Table 1. Overview of modulation of key proteins involved in intracellular cholesterol trafficking in the brain (1).

Control								
Cortical levels (n-fold) <i>mean±SEM</i>			Hippocampal levels (n-fold) <i>mean±SEM</i>					
Marker	mRNA	Protein ^(a)	CA1		CA2		CA3	
			Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization
Aβ42	n.a.	n.a.	1.00 ± 0.262	n.a.	1.00 ± 0.471	n.a.	1.00 ± 0.323	n.a.
p-tau	n.a.	n.a.	1.00 ± 0.342	n.a.	1.00 ± 0.368	n.a.	1.00 ± 0.288	n.a.
NPC1	1.00 ± 0.019	1.00 ± 0.017	1.00 ± 0.173	1.00 ± 0.196	1.00 ± 0.357	1.00 ± 0.120	1.00 ± 0.331	1.00 ± 0.192
StARDI	1.00 ± 0.015	1.00 ± 0.044	1.00 ± 0.321	1.00 ± 0.271	1.00 ± 0.458	1.00 ± 0.331	1.00 ± 0.396	1.00 ± 0.178
StARD3/ MLN64	1.00 ± 0.030	1.00 ± 0.237	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
StARD4	1.00 ± 0.023	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
INSIG	n.a.	1.00 ± 0.053	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SREBP2	n.a.	1.00 ± 0.028	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Alzheimer disease								
Cortical levels (n-fold) <i>mean±SEM</i>			Hippocampal levels (n-fold) <i>mean±SEM</i>					
Marker	mRNA	Protein ^(a)	CA1		CA2		CA3	
			Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization
Aβ42	n.a.	n.a.	7.04 ± 2.106	n.a.	1.97 ± 0.727	n.a.	1.91 ± 0.556	n.a.
p-tau	n.a.	n.a.	2.42 ± 0.736	n.a.	1.63 ± 0.554	n.a.	1.67 ± 0.621	n.a.
NPC1	1.02 ± 0.039	1.12 ± 0.025 p ₁ =0.0043	8.07 ± 1.834 p ₁ =0.0006	0.92 ± 0.194	3.77 ± 0.800 p ₁ =0.0111	1.25 ± 0.238	8.06 ± 1.539 p ₁ =0.0006	1.08 ± 0.087 p ₂ =0.0023
StARDI	1.00 ± 0.014	1.25 ± 0.056 P ₁ =0.0087	2.31 ± 0.419 p ₁ =0.0379	2.60 ± 0.563 P ₁ =0.0111	2.00 ± 0.918	0.67 ± 0.232	5.92 ± 2.171 P ₁ =0.0047; p ₂ =0.0130	1.19 ± 0.249
StARD3/ML N64	0.99 ± 0.062	0.64 ± 0.150	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
StARD4	1.00 ± 0.020	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
INSIG	n.a.	1.05 ± 0.160	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SREBP2	n.a.	1.12 ± 0.161	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Down syndrome								
Cortical levels (n-fold) <i>mean±SEM</i>			Hippocampal levels (n-fold) <i>mean±SEM</i>					
Marker	mRNA	Protein ^(a)	CA1		CA2		CA3	
			Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization	Protein ^(b)	GFAP+ colocalization
A(342)	n.a.	n.a.	11.30 ± 3.423 P _i =0.0012	n.a.	4.27 ± 1.275 P _i =0.0177	n.a.	3.99 ± 1.051 P _i =0.0221	n.a.
p-tau	n.a.	n.a.	2.59 ± 0.783	n.a.	2.29 ± 0.784	n.a.	2.88 ± 1.135	n.a.
IMPCI	1.08 ± 0.028	1.04 ± 0.036	9.86 ± 2.413 p ₁ =0.0006	1.62 ± 0.420	5.41 ± 1.740 P ₁ =0.0111	2.05 ± 0.577	8.79 ± 1.822 P ₁ =0.0006	1.08 ± 0.087 p ₁ =0.0023
StARDI	1.08 ± 0.013 P ₁ =0.0087	1.35 ± 0.044 P ₁ =0.0043; p ₂ =0.0159	0.97 ± 0.182 p ₂ =0.0111	2.81 ± 0.755	0.56 ± 0.212	0.80 ± 0.246	2.62 ± 1.290 p ₂ =0.0130	2.01 ± 0.311 P ₁ =0.0111

StARD3/ MLN64	1.13 ± 0.053	1.47 ± 0.277	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
StARD4	1.03 ± 0.008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
INSIG	n.a.	1.14 ± 0.043	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SREBP2	n.a.	1.14 ± 0.061	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

NOTE: P values are calculated by differences against control (pi) or differences between AD and DS (pz).

Supplementary Table 2. Overview of modulation of key proteins involved in intracellular cholesterol trafficking in the brain (1).

<i>Astrocyte (GFAP+) cholesterol (PFO+) colocalization (n-fold)</i>			
<i>Organelle marker</i>	<i>Control</i>	<i>AD</i>	<i>DS</i>
<i>Tom20 (mitochondria)</i>	1.00 ± 0.257	2.55 ± 0.297; $p_1=0.0079$	2.77 ± 0.203; $p_1=0.0159$
<i>Lamp1 (lysosome)</i>	1.00 ± 0.136	3.43 ± 0.502; $p_1=0.0079$	14.41 ± 1.322; $p_{1,2}=0.0079$

Supplementary Table 3. Oligonucleotides used for gene expression analysis by RT-qPCR.

Gene	Sequence
StARD1	5'-GAGGAGGCCATGCAGAA
	5'-GAACACCTTGCCCACATC
StARD3	5'-AGTGAGGAGCCCAGGGAG
	5'-CCGTGGCTGACATGGAG
StARD4	5'-CGTTTTCTTAGCAACTCGCC
	5'-CTTCCACGTCCTTGCTTCAC
NPC1	5'-CATCCTTTGGCAATGGTTTT
	5'-CTGCTGCTACTGTGTCCAGC
β-Actin	5'-TTGCCGACAGGATGCAGAA
	5'-GCCGATCCACACGGAGTACT

Supplementary Table 4. Primary antibodies used in this study.

Antibody	Source and type	Company	WB dilution	IHC/IF dilution
StARD1	Rabbit monoclonal	Abcam (ab133657)	1:1000	1:200
StARD3 (MLN64)	Rabbit polyclonal	Sant Cruz (sc-292868)	1:1000	
SREBP2	Rabbit polyclonal	Abcam (ab28482)	1:500	
INSIG-1	Rabbit polyclonal	Abcam (ab70784)	1:1000	
NPC-1	Rabbit polyclonal	Abcam (ab36983)	1:500	1:200
A β human (6F/3D)	Mouse monoclonal	Dako (M0872)		1:2000
Lamp1	Rabbit polyclonal	Sant Cruz (sc-5570)		1:200
Tom20	Rabbit polyclonal	Sant Cruz (sc-11415)		1:200
GFAP	Rat monoclonal	Calbiochem (345860)		1:200
Glutathione-S-Transferase (GST)	Mouse monoclonal	Sant Cruz (sc-374171)		1:200
PHF-tau (AT8)	Mouse monoclonal	Thermofisher (MN1020)		1:200
β -Actin-HRP	Mouse monoclonal	Sigma (A3854)	1:20000	
NeuN	Mouse monoclonal	Millipore (MAB377)		1:200
IBA1	Mouse monoclonal	Santa Cruz (sc-32725)		1:200