Supplementary Table 3 Antibodies and Reagents

Antibody	Species	Application	Catalog No.	Company	Use	Molecular Weight
anti-REST	Rabbit	ChIP/FACS	17-641	Millipore	2-5ug/ChIP	120-200KDa
anti-REST	Rabbit	Western/ICC	07-579	Millipore	1:500'	120-200KDa
anti-REST	Rabbit	Western	ab52850	Abcam	1:500'	132KDa
anti-REST	Rabbit	IHC/IF	IHC-00141	Bethyl Laboratories	1:100'	
anti-REST	Rabbit	IHC/IF	ab28018	Abcam	1:100'	
anti-REST	Goat	IHC/IF	sc-15118	Santa Cruz	1:100'	
anti-14-3-3 zeta	Rabbit	Western	sc-1019	Santa Cruz	1:3000'	30KDa
anti-8-oxo-guanine	Mouse	IHC/IF	24328	Oxis	1:75'	
anti-Abeta/APP (6E10)	Mouse	IHC/IF	SIG-39320	Covance	1:200'	
Anti-alpha-synuclein	Goat	staining	ab2080	Abcam	1/300	
Anti-Amyloid Beta (1-16) 6E10	Mouse	staining	SIG-39320-200	Covance	1/300	
Anti-Atg12	Sheep	staining	ab64213	Abcam	1/300	
Anti-Atg7	Sheep	staining	ab62112	Abcam	1/300	
anti-BACE	Rabbit	Western	AB5832	Millipore	1:500'	70KDa
anti-Bax	Mouse	IHC/IF	ab77566	Abcam	1:250'	
anti-BAX	Rabbit	Western	06-499	Millipore	1:500'	23KDa
anti-b-catenin	Rabbit	Western	9587	Cell Signaling	1:1000'	92KDa
anti-b-catenin	Mouse	FACS/IHC/IF	05-665	Millipore	1-2ul/1million cells	92KDa
anti-BCL2	Rabbit	Western	2876	Cell Signaling	1:500'	28KDa
anti-beta-catenin	Goat	IHC/IF	AF1329	R&D	1:150'	
anti-Calbindin	Mouse	staining	ab82182	Abcam	1/200	
anti-Cdk5	Rabbit	Western	1698-1	EPITOMICS	1:1,000	33KDa
Anti-cleaved caspase 3 (Asp175)	Rabbit	staining	9661	Cell Signaling	1/300	
anti-cleaved-CASPASE 3	Mouse	Western/IF	9664L	Cell Signaling	1:500 / 1:300	17/19KDa
anti-CoREST	Rabbit	ChIP/Western	07-455	Millipore	2-5ug/ChIP	66KDa
anti-Daxx	Mouse	IHC/IF	ab49287	Abcam	1:100'	
anti-DAXX	Rabbit	Western	07-471	Upstate	1:5,000	110KDa
anti-FADD	Rabbit	Western	2988-1	EPITOMICS	1:1,000	28KDa
anti-FOXO1	Rabbit	Western	2880	Cell Signaling	1:500'	78KDa
anti-FOXO1A	Rabbit	Western/IHC	ab39670	Abcam	1:500'	78KDa
anti-FOXO3a	Rabbit	Western	2497	Cell Signaling	1:500'	97KDa
anti-G9a/KMT1C	Rabbit	ChIP	ab40542	Abcam	2-5ug/ChIP	132KDa
anti-GSK-3b (27C10)	Rabbit	Western	9315	Cell Signaling	1:500'	46KDa
anti-H3	Rabbit	ChIP/Westen	ab1791	Abcam	2-5ug/ChIP	16KDa
anti-H3K36me3	rabbit	ChIP	ab9050	Abcam	2-5ug/ChIP	16KDa
anti-H3K4me2	Rabbit	ChIP/FACS	07-030	Millipore	2-5ug/ChIP	16KDa
anti-H3K9Ac	mouse	FACS/IHC	H0913_200ul	Sigma	2-5ug/ChIP	16KDa
anti-H3K9me2	mouse	ChIP/FACS	ab1220	Abcam	2-5ug/ChIP	16KDa

anti-HDAC1	Rabbit	ChIP/Western	ab7028	Abcam	1:2,000	57KDa
anti-HDAC2	Rabbit	ChIP/Western	ab7029	Abcam	1:2,000	57KDa
Anti-LAMP1	Mouse	staining	NBP2-25183	Novus Bio	1/150	
Anti-LAMP2	Mouse	staining	ab25631	Abcam	1/100	
Anti-LC3	Sheep	staining	NB110-74847	Novus Bio	1/300	
anti-MAP2	Mouse	Western/IHC	MAB3418	Millipore	1:500'	230KDa
anti-Mouse-Alexa 594	Goat	IHC/IF	A11005	Invitrogen	1:300'	
anti-NeuN	Mouse	FACS/IHC/IF	MAB377	Millipore	1:500'	46/48KDa
anti-p35/25 (Cdk5R1)	Rabbit	Western	2680	Cell Signaling	1:500'	35/25KDa
anti-p39 (Cdk5R2)	Rabbit	Western	3536-1	EPITOMICS	1:1,000	45KDa
anti-Presenilin 1	Rabbit	Western	2094-1	EPITOMICS	1:1,000	18KDa
anti-Presenilin 2	Rabbit	Western	1987-1	EPITOMICS	1:10,000	23KDa
anti-PSEN2	Mouse	IHC/IF	ab15549	Abcam	1:20'	
anti-PUMA	Rabbit	Western	ABC158	Millipore	1:500'	23KDa
anti-Rabbit-Alexa 488	Goat	IHC/IF	A11008	Invitrogen	1:300'	
Anti-Somatoststin	Rat	staining	MAB354	Millipore	1/200	
anti-Tau-p (AT8 clone)	Mouse	Western/IHC	MN1020	Thermo Scientific	1:150'	
anti-Tau-p (PHF1 clone)	Mouse	Western/IHC	N/A	Peter Davies/gift	1:200'	
Anti-TDP-43	Mouse	staining	H00023435-M01	Abnova	1/100	
anti-TUJ1	Rabbit	IHC/IF	mab1637	Millipore	1:300'	55KDa
APC Annexin V	APC Conjugated	FACS	550474	BD Pharmingen	5ul/100ul/1E5 cells	
NeuN_Alexa_488	Mouse	FACS	MAB377X	Millipore	1-2ul/1million cells	

Reagent	Species	Application	Catalog No.	Company	Use
Recombinant Human DKK-1	human	Wnt Inhibitor	1096-DK/CF	E&D System	250ng/ml
Recombinant Human Wnt-7a	human	Wnt activator	3008-WN	E&D System	250ng/ml
Recombinant Human Wnt-3a	human	Wnt activator	5036-WN	E&D System	250ng/ml
Amyloid Beta(1-42)	human		62-0-80	American Peptide Compa	1uM~15uM
ChIR99021		GSK-3b Inhibitor	1677-5,25	BioVison	20nM-100nM
Rotenone		Mito ETC Inhibitor	3616	TOCRIS	50nM-100nM
Bafilomycin A1		Autophagy Inhibitor	tlrl-baf	InvivoGen	100nM-300nM
3-MA		Autophagy Inhibitor	tlrl-3ma	InvivoGen	5mM
DL-Buthionine-sulfoximine		Depletion of glutathion	19176-1G	Sigma	50μM-100μM
N -Acetyl-L-cysteine		Antioxidant	616-91-1	Sigma	1mM-5mM
Paraquat		Oxidative stress	36541-100MG	Sigma	5mM
CellROX® Deep Red	APC Conjugated	FACS	C10422	Invitrogen	Follow instructions
CM-DCFDA	FITC Conjugated	Confocal	C6827	Invitrogen	25uM
Lightning-Link APC Conjugation Kit		Antibody conjugation	705-0010	Innova Biosciences	Follow instructions
Streptavidin-Alexa 555		IHC/IF	S32355	Sigma	1/500'
Vectastain Elite ABC kit (Rabbit)		IHC/IF	PK6101	Vector Labs	Follow instructions
Vectastain Elite ABC kit (Mouse)		IHC/IF	PK6102	Vector Labs	Follow instructions
Diva Decloaker 10x		IHC/IF	DV2004MX	Biocare	1x
Sudan Black		IHC/IF	199664-25G	Sigma	1% in 80% ethanol
ProLong Gold anti-fade with DAPI		IHC/IF	P36935	Invitrogen	Follow instructions
TUNEL kit		TUNEL apoptosis dete	17-141	Millipore	Follow instructions

Used in
Figure 1e (FACS, right panel), f. Figure 2a. Figure 6d. Extended Data Figure 2c, d; 6f; 7d; 9a, b.
Figure 1c. Extended Data Figure 3b, c; 6a, b, c, d, h; 7a, b, c; 10c.
data not shown
Figure 1d, e (Imaging, left panel). Figure 2c, d. Figure 3b, Figure 5, Figure 6a. Extended Data Figures 1a, b, c; 4h; 7e, h; 8a, b; 10a.
data not shown
data not shown
data not shown
Extended Data Figure 4h
Figure 5b
Figure 5b
Figure 5b
Extended Data Figure 8a
Extended Data Figure 8a
Extended Data Figure 3b
Figure 2c
data not shown
Extended Data Figure 6h;7a,b
Extended Data Figure 7g, 7h
Extended Data Figure 3b
Extended Data Figure 7h
Figure 2c
data not shown
Figure 3c
data not shown
data not shown
Figure 2c
Extended Data Figure 3b
Extended Data Figure 3b
Extended Data Figure 10c
data not shown
data not shown
data not shown
Extended Data Figure 3b
data not shown
data not shown
data not shown
Figure 2c
data not shown

data not shown
data not shown
Extended Data Figure 8a
Extended Data Figure 8a
Figure 5b. Extended Data Figure 8a, b
Figure 1d, Figure 5a
Figure 1d, Figure 2d, Figure 5. Extended Data Figures 1, 4a, h and 7e, h
Figure 1c, e, f. Figure 2a. Figure 6b, c, d. Extended Data Figure 9
Extended Data Figure 3b
Extended Data Figure 3b
data not shown
Extended Data Figure 3b
Figure 2c

Extended Data Figure 3b

Figure 1d, Figure 2d, Figure 5. Extended Data Figures 1, 4a, h and 7e, h
Figure 2c
Extended Data Figure 3c
Figure 5b. Extended Data Figure 3c
Figure 5b
Figure 3b. Extended Data Figure 4a
Extended Data Figure 4c
Figure 1c, e, f. Figure 2a. Figure 6b, c, d. Extended Data Figure 9

Comments
The Millipore anti-REST antibody 07-579 recognizes REST in Western blots of human brain samples, SH-SY5Y cells and primary cortical cultures. A similar high molecular weight (>148 kDa) REST band is detected by Western blotting with Abcam antibody ab28018 against the REST N-terminal domain. Specificity was confirmed by Western blotting after REST overexpression or shRNA-mediated REST knockdown.
Antibody IHC-00141 was used for quantitative immunocytochemical analysis of REST in human brain (171 cases; Fig. 1e, left panel). Similar results were obtained with antibodies sc-15118, ab28018 and ab202962.

7 cases from the group of 171 cases labeled with IHC-00141 (Fig. 1d, e) were labeled in separate slides with antibody ab28018 against the REST N-terminal domain (residues 250-350). Similar patterns of REST immunoreactivity were observed with increased nuclear REST in neurons in aged versus young adult cases and reduced nuclear REST in AD. Similar results were also obtained after labeling of 35 cases (10 young, 14 aged and 11 AD) with Abcam antibody ab202962 (residues 400-450).

49 cases (10 young, 21 aged and 18 AD) from the group of 171 cases labeled with IHC-00141 (Fig. 1d, e) were labeled in separate slides with antibody sc-15118 directed against the REST N-terminal domain (residues 105-155). Similar patterns of REST immunoreactivity were observed for both antibodies with increased nuclear REST in neurons in aged versus young adult cases and reduced nuclear REST in AD.
This antibody was also used to confirm the results shown in Figure 3a.