

Supplementary Material

Genetic Spectrum and Clinical Heterogeneity of Chinese Frontotemporal Dementia Patients: Data from PUMCH Dementia Cohort

Supplementary Table 1. Clinical characteristics of 24 FTD-gene variant carriers

Case	Gene	Variant	Gender	Age /AOO	FHD	Handedness	APOE	Clinical manifestation	Clinical diagnosis
1	<i>MAPT</i>	L583V	Male	35/31	+	Right	ε3ε4	<ul style="list-style-type: none"> ● An effortful speech with agrammatism, dysgraphia, hypersomnolence, disinhibition, repetitive behavior, memory deficit; MMSE 8, ADL 43; ● MRI: left fronto-temporal atrophy; FDG-PET: left fronto-temporal predominant hypometabolism 	nvPPA
2	<i>MAPT</i>	L583V	Female	32/31	-	Right	ε2ε3	<ul style="list-style-type: none"> ● Personality change, irritability, disinhibition, repetitive and compulsive behavior, pyramidal sign, executive dysfunction; MMSE 16, ADL 32; ● MRI: right fronto-temporal predominant atrophy 	bvFTD
3	<i>MAPT</i>	L583V	Female	34/32	+	Right	ε3ε3	<ul style="list-style-type: none"> ● An effortful speech with agrammatism, pyramidal sign; CDR 2; ● MRI: left fronto-temporal atrophy 	nvPPA
4	<i>MAPT</i>	L583V	Female	41/40	+	Right	ε2ε3	<ul style="list-style-type: none"> ● Impaired naming and comprehension; irritability, depression, insomnia, memory deficit; CDR 3; ● MRI: left fronto-temporal atrophy 	svPPA
5	<i>MAPT</i>	P618L	Male	62/60	+	Right	ε3ε3	<ul style="list-style-type: none"> ● Irritability, restlessness, disinhibition, dietary change, apathy, expressive aphasia, bradykinesia, gait instability, urinary incontinence, executive dysfunction; MMSE 22, ADL 36; ● MRI: right fronto-temporal predominant atrophy; CSF: Aβ42 404pg/ml, p-tau 36pg/ml, t-tau 121pg/ml 	bvFTD
6	<i>MAPT</i>	P618L	Male	63/62	+	Right	ε3ε3	<ul style="list-style-type: none"> ● An effortful speech with agrammatism, apathy, stereotyped behavior; MMSE 8, ADL 45; ● MRI: bilateral fronto-temporal atrophy 	nvPPA
7	<i>MAPT</i>	Q561P	Female	69/67	+	Right	ε3ε3	<ul style="list-style-type: none"> ● An effortful speech with agrammatism; CDR 3; ● MRI: bilateral fronto-temporal atrophy with left predominance 	nvPPA
8	<i>TBK1</i>	T457fs	Male	60/50	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Stereotyped behavior, apathy, loss of empathy, expressive aphasia; MMSE 0, ADL 44; ● MRI: bilateral temporal atrophy; CSF: Aβ42 746pg/ml, p-tau 24pg/ml, t-tau 150pg/ml 	bvFTD
9	<i>TBK1</i>	K622fs	Male	71/69	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Impaired naming and comprehension, memory deficit, paranoid, dietary change; MMSE 23, ADL 26; ● MRI: right temporal predominant atrophy; PIB-PET (-) 	svPPA

10	<i>TBK1</i>	c.359-1G>A	Male	55/54	+	Right	ε3ε3	<ul style="list-style-type: none"> ● Impaired naming and comprehension, apathy, stereotyped behavior, dyscalculia; MMSE 0, ADL 48; ● MRI: bilateral fronto-temporo-parietal atrophy with left predominance 	svPPA
11	<i>TBK1</i>	T462fs	Female	59/53	-	Right	ε3ε4	<ul style="list-style-type: none"> ● Impaired naming and comprehension, MND, memory deficit, constipation, executive dysfunction; MMSE 13, ADL 40; ● MRI: bilateral temporal atrophy; FDG-PET: bilateral temporal hypometabolism 	svPPA
12	<i>TBK1</i>	T31fs	Female	56/55	-	Right	ε3ε4	<ul style="list-style-type: none"> ● An effortful speech, pyramidal sign, memory deficit, urinary incontinence, joint deformity; ● Brain: left temporal predominant atrophy, periventricular white matter lesions, Fazekas grade 2 	nvPPA
13	<i>TBK1</i>	M719V	Female	55/50	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Word-finding difficulty and agrammatism, loss of empathy, stereotyped and compulsive behavior, memory deficit, dyscalculia, urinary incontinence, executive and visuospatial dysfunction; MMSE 21, ADL 29; ● MRI: bilateral fronto-temporo-parietal atrophy with left predominance; FDG-PET: left cerebral hypometabolism 	nvPPA
14	<i>TBK1</i>	T331N	Female	59/54	+	Right	ε2ε3	<ul style="list-style-type: none"> ● An effortful speech with spared comprehension, personality change, dyscalculia, pyramidal sign, sleep-talking, urinary urgency, executive dysfunction; MMSE 25, ADL 38; ● MRI: bilateral fronto-parietal atrophy with mild left insular atrophy; CSF: Aβ42 1040pg/ml, p-tau 57pg/ml, t-tau 243pg/ml 	nvPPA
15	<i>TBK1</i> + <i>GRN</i>	R271W +T220I	Male	81/71	+	Right	ε3ε4	<ul style="list-style-type: none"> ● Loss of empathy, disinhibition, compulsive behavior, memory deficit, tremor, hypertonia; MMSE 18, ADL 40; ● MRI: bilateral fronto-temporal atrophy 	bvFTD
16	<i>GRN</i>	P50fs	Male	62/61	-	Right	ε3ε3	<ul style="list-style-type: none"> ● An effortful speech with spared comprehension, personality change, dyscalculia; MMSE 24, ADL 27; ● MRI: left fronto-temporo-parietal predominant atrophy 	nvPPA
17	<i>GRN</i>	P439fs	Female	66/64	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Impaired naming, comprehension and spontaneous speech, dyslexia, dysgraphia, irritability, disinhibition, disorientation, memory deficit, urinary incontinence, visuospatial dysfunction; MMSE 3, ADL 51; ● CT: normal; FDG-PET: bilateral parieto-temporal hypometabolism with right predominance; CSF: Aβ42 795pg/ml, p-tau 50pg/ml, t-tau 480pg/ml 	svPPA
18	<i>VCP</i>	P188T	Male	61/57	-	Right	ε2ε3	<ul style="list-style-type: none"> ● Impaired naming, comprehension and spontaneous speech, inappropriate behavior, memory deficit, disorientation, dyscalculia, tremor; MMSE 13, ADL 29; ● MRI: bilateral fronto-temporal atrophy with left predominance 	svPPA
19	<i>TARDBP</i>	I383V	Male	56/53	+	Right	ε2ε3	<ul style="list-style-type: none"> ● Impaired naming and comprehension, dyslexia, dysgraphia, paranoid, inappropriate behavior, dietary change; CDR 3; ● MRI: left fronto-temporal predominant atrophy 	svPPA

20	<i>SQSTM1</i>	E362K	Male	56/53	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Impaired naming, comprehension and spontaneous speech, dysgraphia, depression, stereotyped behavior, hallucination, memory deficit, insomnia; svPPA ● MRI: bilateral temporal atrophy with right predominance; CSF: Aβ42 666pg/ml, p-tau 58pg/ml, t-tau 430pg/ml
21	<i>UBQLN2</i>	P500S	Female	59/57	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Apathy, loss of empathy, inappropriate behavior, dietary change, constipation, MND; bvFTD ● MRI: left temporal atrophy
22	<i>DCTN1</i>	R292H	Male	61/59	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Impaired naming and comprehension, dyslexia, dysgraphia, irritability, anxiety, insomnia, memory deficit; MMSE 21, ADL 31; svPPA ● MRI: left temporal predominant atrophy; FDG-PET: left temporal predominant hypometabolism; CSF: Aβ42 659pg/ml, p-tau 33pg/ml, t-tau 153pg/ml
23	<i>HNRNP1</i>	N50S	Male	56/54	-	Right	ε3ε3	<ul style="list-style-type: none"> ● Apathy, loss of empathy, paranoid, repetitive behavior, bradykinesia, hypertonia, hypersomnia, rapid eye movement sleep behavior disorder, fecal incontinence, increased eating, executive dysfunction; MMSE 23, ADL 27; bvFTD ● MRI: bilateral insular atrophy; FDG-PET: bilateral frontal hypometabolism; PIB-PET (-); CSF: Aβ42 373pg/ml, p-tau 22pg/ml, t-tau 99pg/ml
24	<i>C9orf72</i>	GGGGCC repeats	Female	57/54	+	Right	ε3ε3	<ul style="list-style-type: none"> ● Personality and mood change, behavioral disorder; MMSE 27, ADL 24; bvFTD ● MRI: bilateral front-temporal atrophy

bvFTD, behavioral variant of FTD; nvPPA, nonfluent/agrammatic variant of primary progressive aphasia; svPPA, semantic variant of primary progressive aphasia; AOO, age of onset; FHD, family history of dementia; *APOE*, apolipoprotein E; CDR, clinical dementia rating; MMSE, Mini-Mental State Examination; ADL, Activities of Daily Living; CSF, cerebrospinal fluid.