

## **Telomere alterations in neurofibromatosis type 1-associated solid tumors**

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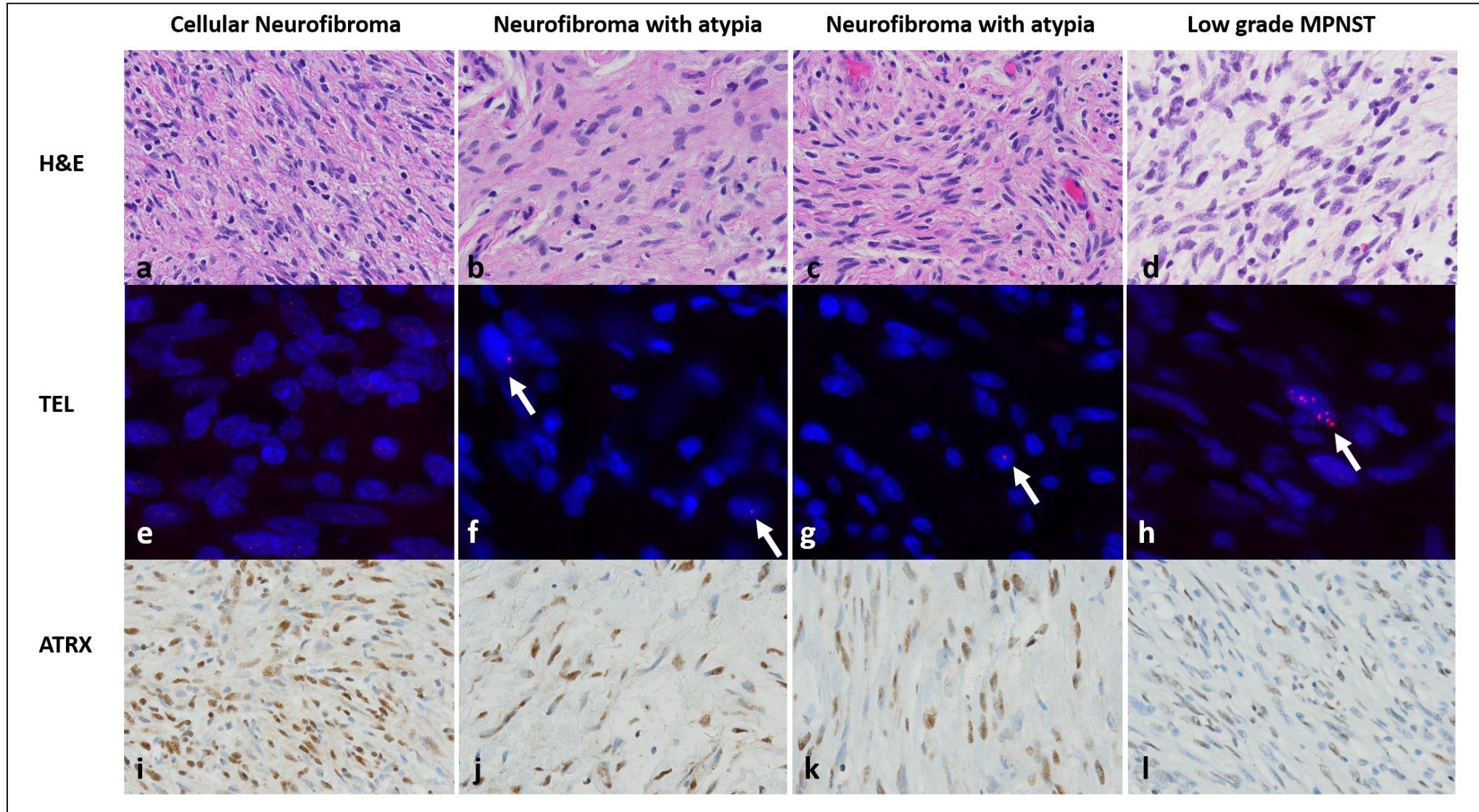
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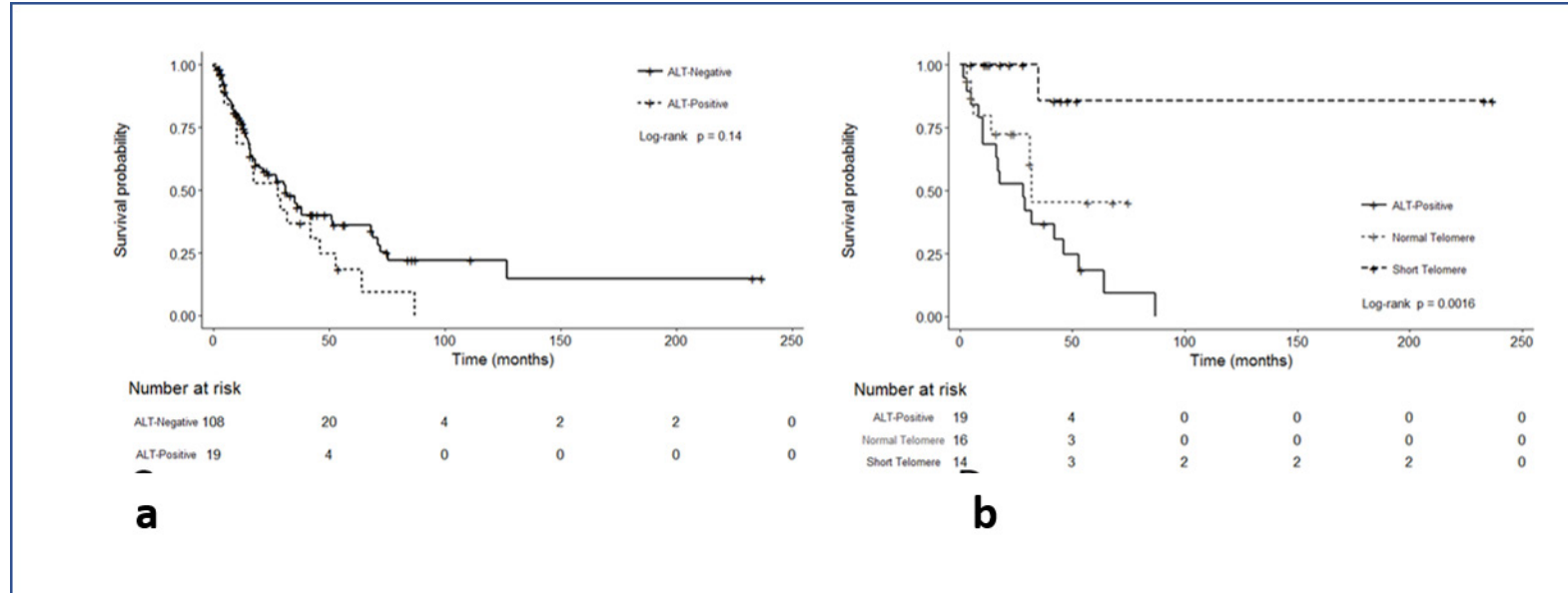
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**Figure S1. MPNST case 78.** Over a number of decades this ALT positive low grade MPNST with ALT but only partial ATRX evolved from a diffuse/cellular neurofibroma lacking ALT (left column) to a neurofibroma with atypia (middle two columns) all the way to ALT positive MPNST (arrows denote large telomeric foci on telomere FISH indicative of ALT).



**Figure S2. Telomere alterations are associated with overall survival in combined MPNST group.** In the MPNST cohort, the survival difference between ALT-positive and ALT-negative tumors was not statistically significant ( $p=0.14$ ) (C). However, overall survival was inferior for tumors with ALT, intermediate for tumors with normal telomeres, and superior for tumors with short telomeres ( $p=0.0016$ ), when further subdivided (D).



**Table S1. Clinicopathologic Features of NF1-Associated Solid Tumors and MPNST (337 patients)**

PT #	Age at Dx (years)	Sex	Tumor Location	Specific Diagnosis	Grade	NF1 Status	ALT	Telomere Lengths	ATRX IHC	DAXX IHC	Individual distinct patient =1	Individual distinct tumor=1	Primary=1, recurrence=2, metastasis=3
1	52	M	R periocular	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
2	18	M	L eye	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
3	41	M	Thoracic spine	MPNST	High grade	NF1	NEGATIVE	Normal	Partial loss		1	1	1
4	38	M	L neck	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
4	38		L nasal	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
4	38		Forehead	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
4	38		L canthus	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
5	7	F	Thalamus	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1	2
6	38	M	R sciatic nerve	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1	1
7	9	M	Cerebellum	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal			1	1	1
8	31	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
9	13	F	Pelvis	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1	1
10	20	F	Temporal lobe	Gliosarcoma	High grade	NF1	NEGATIVE	Normal	Preserved	Preserved	1	1	1
10	18	F	Mediastinum	MPNST	High grade	NF1	NEGATIVE		Preserved			1	1
10	18	F	Mediastinum	Neurofibroma	Benign	NF1	NEGATIVE					1	1
11	37	F	Frontal lobe	Anaplastic astrocytoma	High grade	NF1	POSITIVE	ALT	Loss	Preserved	1	1	1
11	42	F	Frontal lobe	Anaplastic astrocytoma	High grade	NF1	POSITIVE	ALT	Loss	Preserved			2
12				Angiolipoma	Benign	NF1	NEGATIVE	Normal				1	1
12				Angiolipoma	Benign	NF1	NEGATIVE	Normal				1	1
12				Lipoma	Benign	NF1	NEGATIVE	Normal				1	1
12				Lipoma	Benign	NF1	NEGATIVE	Normal				1	1
12				Lipoma	Benign	NF1	NEGATIVE				1	1	1
12				Lipoma	Benign	NF1	NEGATIVE					1	1
12				Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal				1	1
13	27	M	Brainstem	Anaplastic astrocytoma	High grade	NF1	POSITIVE	ALT	Loss		1	1	1
14	33	M	Pleura	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	2
15	5	M	R orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
16	76	F	Sciatic nerve	MPNST	High grade	sporadic	NEGATIVE	Short			1	1	1
17	19	M	skin	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss		1	1	1
18	31	M	L orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	2
19	27	M	L axilla	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		2

19	19	M	Brachial plexus	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
20	33	M	L sciatic/femoral nerve	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1	
21	17	F	Spine	Atypical neurofibroma	Benign	NF1	NEGATIVE		Preserved	1	1	1	
21	17	F	L leg	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1	
22	37	F	R adrenal gland	Pheochromocytoma	Benign	NF1	NEGATIVE	Short	Preserved	1	1	1	
22	37	F	Pericaval	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
22	37	F	Duodenum-medial	GIST	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	
22	37	F	Duodenum-lateral	GIST	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	
23	20	M	L thigh	Glomangioma	Benign	sporadic	NEGATIVE	Normal	Preserved	1	1	1	
24	13	F	Brainstem	Pilocytic astrocytoma	Low grade	NF1			Preserved	1	1	1	
25	32	F	Cerebellum	Pilocytic astrocytoma	Low grade	NF1	POSITIVE	ALT	Loss	1	1	1	
26	14	F	Thalamus	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Partial loss	Preserved	1	1	1
27	9	M	Spinal cord	Glioblastoma	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1	1
28	34	M	Femur	MPNST	High grade	sporadic	NEGATIVE	Short	Preserved	1	1	1	
29	52	M	L scalp	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
29	52	M	L adrenal gland	Pheochromocytoma	Benign	NF1	NEGATIVE			1	1	1	
30	12	M	retroperitoneum	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved	1	1	1	
30	12	M		Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
31	34	M	cerebellum	Diffuse Astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved	1	1	1	
32	38	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1	
33	46	M	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss	1	1	1	
33	55	M	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
33	46	M		Plexiform neurofibroma	Benign	NF1	NEGATIVE				1	1	
34	52	M	L brow	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1	
35	8	M	Spine	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1	
36	59	F	R thumb	Glomus tumor	Benign	NF1	NEGATIVE	Normal		1	1	1	
36	59	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	
36	59	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	
36	59	F	R small finger	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	
37	25	M	radial nerve	MPNST	High grade	NF1	NEGATIVE	Short	Preserved	1	1	1	
38	11	M	Occipital lobe	Low grade astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1	1
39	13	M	4th ventricle	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1	1
40	18	M	R orbit	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
41	7	M	Forehead	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1	
42	45	M	L calf	Dermatofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
43	60	F	L small finger	Glomus tumor	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	

43	60	F	L index finger	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
43	60	F	L small finger	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
44	44	F	Calf	Massive soft tissue neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
44	44	F	scalp	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
45	20	M	R paraspinal	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
45	21	M	L Paraspinal	Neurofibroma	Benign	NF1			Preserved			1	1
45	21	M	R thigh	Neurofibroma	Benign	NF1			Preserved			1	1
45	18	M	L neck	Syringocystadenoma papilliferum	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
46	50	F	ampulla	Gangliocytic paraganglioma	Benign	NF1	NEGATIVE	Normal					1
46	50	F	Ampulla	Gangliocytic paraganglioma	Benign	NF1	NEGATIVE				1	1	1
47	37	F	soft tissue	Plexiform neurofibroma	Benign	NF1	NEGATIVE		Partial loss			1	1
47	37	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
47	37	F	soft tissue	Plexiform neurofibroma	Benign	NF1			Preserved			1	1
48	34	F	L orbit	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
48	23	F	R shoulder	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
48	23	F	back	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
48	23	F	L neck	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal				1	1
49	31	F	R foot	Atypical neurofibroma	Benign	Schwannomatosis	NEGATIVE	Normal	Preserved		1	1	1
50	25	F	Groin	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
50	25	F	L breast	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
50	25	F	L neck	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
51	4	M	Suprasellar region	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Preserved		1	1	2
51	17	M	Parietal lobe	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved		1	1
52	41	M	R neck	MPNST	High grade	NF1	NEGATIVE	Short	Preserved	Partial loss	1	1	2
53	60	F	L knee	MPNST	High grade	NF1	POSITIVE	ALT	Partial loss	Preserved	1	1	1
53	49	F	L upper lid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
54	42	F	L buttock	Massive soft tissue neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
55	11	M	Spinal cord	Diffuse Astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1	1
56	20	M	Jejunum	GIST	Low grade	NF1	NEGATIVE	Short			1	1	1
57	15	F	scalp	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
58	26	F	Proximal femur	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	3
59	15	M	R frontal lobe	Low grade astrocytoma	Low grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1	1
60	20	F	L frontal lobe	SEGA-like astrocytoma	Low grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1	1
60	21	F	chest wall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
60	21	F	Left arm	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
60	21	F	Left hip	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1

61	28	M	Mediastinum	MPNST	High grade	NF1	NEGATIVE	Normal	Partial loss	Preserved	1	1	1
61	28	M	Mediastinum	MPNST	High grade	NF1	NEGATIVE	Short	Preserved	Preserved		0	1
61	28	M	R neck	ANNUBP	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
61	28	M	L thigh	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
62	61	M	R lower lid	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
63	37	M	Axilla	Atypical neurofibroma	Benign	NF1	NEGATIVE		Partial loss			1	1
63	37	M	Lumbar-paraspinal	MPNST	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	2
64	64	F	gluteus	Atypical neurofibroma	Benign	NF1			Partial loss			1	1
64	64	F	R sciatic nerve	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	2
65	33	F	R paraspinal	MPNST	High grade	NF1	POSITIVE	ALT	Partial loss	Preserved	1	1	1
65	33	F	Lung	MPNST	High grade	NF1	POSITIVE	ALT	Partial loss	Preserved		1	3
65	33	F	lung	MPNST	High grade	NF1	POSITIVE	ALT	Partial loss	Preserved		1	3
65	34	F	lung	MPNST	High grade	NF1	POSITIVE	ALT	Preserved	Preserved		1	3
66	64	M	L brachial plexus	MPNST		sporadic	NEGATIVE	Short	Preserved		1	1	1
67	52	M	Femoral nerve	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
67	52	M	Femoral nerve	MPNST	High grade	NF1	NEGATIVE	Short				1	1
68	16	F	Frontal lobe	Oligodendroglioma, IDH mutant and 1p/19q codeleted	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
69	36	F	R adrenal gland	Pheochromocytoma		NF1	NEGATIVE		Preserved		1	1	1
69	36	F	L adrenal gland	Pheochromocytoma		NF1	NEGATIVE		Preserved			1	1
70	25	M	R thalamus	Diffuse Astrocytoma	Low grade	NF1	POSITIVE	ALT	Loss	Preserved	1	1	1
70	26	M	R thalamus	Diffuse Astrocytoma	Low grade	NF1	POSITIVE	ALT					2
71	2	M	periorbital	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss		1	1	2
72	50	M	L face	Spindle cell tumor	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
73	9	M	R orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
74	19	F	L orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
74	22	F	L orbit	Plexiform neurofibroma	Benign	NF1			Preserved				2
74	21	F	L eyelid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal					2
74	20	F	L orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal					2
75	9	F	Tectum	Low grade astrocytoma	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1	1
76	40	F	R orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
77	35	F	R thigh	Localized intraneural neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
77	35	F	R waist	Localized intraneural neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
77	26	F	Sacrum	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
77	35	F	L thigh	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
78	62	F	Intracranial	MPNST	Low grade	NF1	POSITIVE	ALT	Partial loss	Partial loss	1	1	1
78	60	F	scalp	Atypical neurofibroma	Benign	NF1	POSITIVE	ALT	Partial loss	Preserved		1	2

78	60	F	R temporal	Diffuse neurofibroma	Benign	NF1	POSITIVE	ALT	Partial loss	Preserved			2
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss		1		1
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss		1		1
78	58	F	R buttock	Malignant spindle cell neoplasm	High grade	NF1	POSITIVE	ALT	Partial loss				3
78	58	F	F forehead	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss				2
78	57	F	R orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved				2
78	56	F	L small finger	Glomus tumor	Benign	NF1	NEGATIVE		Preserved		1		1
78	56	F	R eyelid	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved				2
78	56	F	L small finger	Traumatic neuroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		1
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal			1		1
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal			1		1
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal			1		1
78	58	F	Back-skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal			1		1
78	55	F	R orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal					2
79	9	M	L eyelid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
80	30	M	R buttock	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		1
80	30	M	R shoulder	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
80	30	M	R elbow	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		1
81	1	F	Eyelid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
82	16	m	L orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
83	39	M	R adrenal gland	Pheochromocytoma	Benign	NF1	NEGATIVE		Preserved		1	1	1
84	15	M	Spinal cord	Ganglioglioma	Low grade	NF1	NEGATIVE				1	1	1
85	54	M	brain	Anaplastic astrocytoma	High grade	NF1	NEGATIVE		Preserved		1		1
85	54	M	pelvis	GIST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
86	26	M	R conjunctiva	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	2
86	25	M	Orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal					1
87	64	M	Lumber nerve root	MPNST	High grade	sporadic	NEGATIVE	Short			1	1	1
88	57	F	L adrenal gland	Pheochromocytoma	Benign	NF1	NEGATIVE		Loss		1	1	1
89	38	M	L femoral nerve	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
90	64	F	L upper lid	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
91	49	M	L peroneal nerve	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
92	59	F	Eyelid	Neurofibroma	Benign	NF1	NEGATIVE		Preserved		1	1	1
93	54	F	small bowel	GIST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
93	54	F	Ovaries (disseminated)	Ovarian serous carcinoma	High grade	NF1	NEGATIVE		Preserved		1		1
94	44	F	Pelvis	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		1
94	44	F	Sciatic nerve	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1



95	15	F	Lumbar region	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1	1
96	18	F	supraclavicular	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
97	25	M	buttock	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
98	39	F	Retroperitoneum	MPNST	High grade	NF1	NEGATIVE	Short		Preserved		1	1
98	37	F	retroperitoneum	Atypical neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
98	40	F	brain	MPNST	High grade	NF1	NEGATIVE	Short	Preserved			1	3
98	39	F	retroperitoneum	MPNST	High grade	NF1	NEGATIVE	Short					1
99	60	M	Lung	MPNST	High grade	sporadic	NEGATIVE	Short	Preserved		1	1	3
99	58	M	inguinal region	MPNST	High grade	sporadic	NEGATIVE	Short				1	3
100	79	F	L eyelid	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
101	42	F	R plexus	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
102	50	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
102	62	F	L orbit	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
103	10	M	Femoral nerve	MPNST	High grade	NF1	NEGATIVE	Long	Preserved		1	1	1
103	9	M	L thigh	Neurofibroma	Benign	NF1	Negative	Normal	Preserved			1	1
103	10	M	Femoral nerve	Plexiform neurofibroma	Benign	NF1			Preserved			1	1
104	27	M	L spinal	MPNST	High grade	Schwannomatosis	NEGATIVE	Normal	Preserved	Preserved	1	1	1
105	9	F	R lower lid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
106	17	F	L upper lid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
107	62	M	R brachial plexus	Atypical neurofibroma	Benign	NF1	NEGATIVE		Preserved			1	1
107	62	M	R brachial plexus	Neurofibroma	Benign	NF1	NEGATIVE		Preserved		1	1	1
108	32	M	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
109	62	F	R index finger	Glomus tumor	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
110	33	F	L posterior thigh/sciatic nerve	MPNST	High grade	NF1	POSITIVE	ALT	Loss	Equivocal	1	1	1
110	33	F	L posterior thigh/sciatic nerve	MPNST	High grade	NF1	POSITIVE	ALT	Loss	Preserved			1
110	33	F	L posterior thigh/sciatic nerve	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss			1	1
111	2	F	L upper lid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1		2
111	1	F	L orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
112	43	F	R orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	2
113	22	M	Pineal region	Pilocytic astrocytoma with anaplasia	High grade	NF1	POSITIVE	ALT	Loss		1	1	1
114	15	M	abdomen	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
115	42	M	R chest wall	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
115	42	M	L upper chest	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
115	42	M	L center chest	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
115	42	M	sternum	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1
115	42	M	L neck	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1

115	42	M	L lower abdomen	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	L upper thigh	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	buttocks	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	L flank	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	L flank	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	Upper center back	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	R upper back	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	L posterior auricular	Neurofibroma+nevus	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	L shoulder	Neurofibroma+nevus	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	center upper chest	Neurofibroma+nevus	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	42	M	center abdomen	Neurofibroma+nevus	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	
115	41	M	L adrenal	Pheochromocytoma	Benign	NF1	NEGATIVE				1	1	1
116	18	F	L thigh	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	2
117	24	M	L paraspinal	MPNST	High grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
117	22	M	R foot	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
117	24	M	L paraspinal	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved				2
117	25	M	L paraspinal	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved				2
118	15	M	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
118	14	M	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1	1
119	39	M	small bowel	GIST	Low grade	NF1	NEGATIVE	Short			1	1	1
119	39	M	small bowel	GIST	Low grade	NF1	NEGATIVE	Short			1	1	1
119	39	M	small bowel	GIST	Low grade	NF1	NEGATIVE	Short			1	1	1
120	35	M	small bowel	GIST	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
121	46	F	skin	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
122	44	M	Sciatic nerve	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1	2
122	41	M	Chest wall	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	1
123	75	F	abdomen	GIST	High grade	NF1	NEGATIVE	Normal			1	1	1
124	35	F	L parieto-occipital lobe	Ganglioglioma	Low grade	NF1					1	1	1
125	8	F	R upper eyelid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1	2
125	9	F	R upper eyelid	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal					2
126	14	M	Brainstem	Diffuse Astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved	Preserved	1	1	1
127	23	M	Sciatic nerve	MPNST	High grade	NF1	NEGATIVE	Normal			1	1	1
128	39	M	cerebellum	Diffuse Astrocytoma	Low grade	NF1	POSITIVE	ALT	Loss		1	1	1
129	20	F	Frontal lobe	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved	Preserved	1	1	1
130	15	M	R frontal lobe	SEGA-like astrocytoma	Low grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1	1
131	17	M	L frontal lobe	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved	Preserved	1	1	1

132	24	F	brain	SEGA-like astrocytoma	Low grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1	1
133	53	F	Lateral ventricle	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
134	25	M	L frontal lobe	SEGA-like astrocytoma	High grade	NF1	POSITIVE	ALT	Aberrent	Preserved	1	1	1
135	9	M	Suprasellar	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE		Preserved		1	1	1
136	12	F	cerebellum	Pilocytic astrocytoma with anaplasia	High grade	NF1	NEGATIVE	Long	Preserved		1	1	1
137	46	F	R temporal lobe	Pilocytic astrocytoma with anaplasia	High grade	NF1	NEGATIVE		Partial loss		1	1	1
138	29	M	cerebellum	Pilocytic astrocytoma with anaplasia	High grade	NF1	POSITIVE	ALT	Loss		1	1	1
139	46	M	L parietal lobe	Pilocytic astrocytoma with anaplasia	High grade	NF1	POSITIVE	ALT	Loss		1	1	1
140	4	F	Cerebellum	Glioblastoma with giant cell features	High grade	NF1	POSITIVE	ALT	Loss	Preserved	1	1	1
141	14	M	4th ventricle	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved	Preserved	1	1	1
142	48	F	Brain	Diffuse Astrocytoma	Low grade	NF1	POSITIVE	ALT	Partial loss	Preserved	1	1	1
143	34	M	Parietal lobe	Anaplastic pleomorphic xanthoastrocytoma	High grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1	1
144	19	F	Temporal lobe	Low grade astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved	Preserved	1	1	1
145	5	M	Optic Nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
146	20	F	L frontal lobe	Anaplastic pleomorphic xanthoastrocytoma	High grade	NF1	POSITIVE	ALT	Partial loss		1	1	1
147	4	F	Lateral ventricle	Pilocytic astrocytoma	High grade	NF1	NEGATIVE	Long	Preserved		1	1	1
147	2	F	Optic Nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved			1	1
147	4	F	Lateral ventricle	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE						2
148	37	M	Brainstem	Pilocytic astrocytoma with atypical features	Low grade	NF1	POSITIVE	ALT	Loss		1	1	1
148	38	M	Brainstem	Pilocytic astrocytoma with atypical features	Low grade	NF1	POSITIVE	ALT	Loss				2
149	49	F	Frontal lobe	SEGA-like astrocytoma	High grade	NF1	NEGATIVE				1	1	1
150	25	F	Lateral ventricle	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
151	46	F	Temporal lobe	SEGA-like astrocytoma	Low grade	NF1	NEGATIVE	Normal			1	1	1
152	17	M	L frontal lobe	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
153	13	M	R frontal lobe	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
154	10	F	cerebellum	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
155	2	M	L optic nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Partial loss		1	1	1
156	4	F	R thalamus	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE		Preserved		1	1	2
157	21	F	L temporoparietal	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
158	5	F	cerebellum	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
159	3	F	R optic nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal			1	1	1
160	5	M	L optic nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
161	5	F	L optic nerve	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved		1	1	1
162	30	F	R lateral ventricle	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Normal	Preserved		1	1	1
163	24	M	brainstem	Pilocytic astrocytoma	Low grade	NF1					1	1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved			1	1

164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-foot	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
164	33	F	Skin-chestwall	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
<b>164</b>	30	F	Buttock	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
<b>165</b>	33	F	skin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
165	33	F	Skin-cheek	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
165	33	F	Skin-hand	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
165	33	F	Skin-hand	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
165	33	F	Skin-back	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
165	33	F	Skin-trunk	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
<b>166</b>	46	F	Nerve root	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
<b>167</b>	25	M	Midbrain	Pilocytic astrocytoma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	2
167	29	M	Posterior fossa	Pilocytic astrocytoma	Benign	NF1	NEGATIVE	Normal	Preserved			2
<b>168</b>	22	F	4th ventricle	Rosette forming glioneuronal tumor	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
<b>169</b>	10	F	cerebellum	Pilocytic astrocytoma	Benign	NF1	NEGATIVE	Short	Preserved	1	1	1
<b>170</b>	20	M	L anterior neck	MPNST	High grade	NF1	NEGATIVE	Normal	Partial loss	1	1	1
<b>171</b>	31	M	Skin-R back	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
171	31	M	Skin-L arm	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
171	31	M	Skin-R shoulder	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
171	31	M	Skin-L lateral trunk	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
171	31	M	Skin-R chin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
171	31	M	Soft tissue-L lateral trunk	Subcutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
<b>172</b>	23	F	Skin-R shoulder	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
172	23	F	Skin-L shoulder	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
172	23	F	Skin-L middle back	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
172	23	F	Skin-Right middle back	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
172	23	F	Skin-inferior back	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
172	23	F	Skin-Middle back	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
<b>173</b>	30	M	Lateral ventricle	Anaplastic astrocytoma	High grade	NF1	POSITIVE	ALT	Loss	1	1	1
<b>174</b>	7	M	Skin-L eyelid	Juvenile xanthogranuloma	Benign	NF1	NEGATIVE	Short	Preserved	1	1	1
<b>175</b>	31	F	L forearm	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1

176	21	M	Paraspinal	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
176	21	M	R thigh	Neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
177	13	M	L orbit	Plexiform neurofibroma	Benign	NF1			Preserved	1	1	1
178	13	M	L eyelid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
179	9	F	L upper eyelid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal		1	1	1
180	14	M	L upper eyelid	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
181	39	F	l upper eyelid	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
182	16	M	R orbit	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
183	61	M	L upper eyelid	Localized neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
184	23	F	L orbit	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
185	43	F	Brain	Anaplastic astrocytoma	High grade	NF1	POSITIVE	ALT	Loss	1	1	1
186	37	F	skin-elbow	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
186			skin-elbow	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
186			Skin-chin	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
186			Skin-knee	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
186			Skin-knee	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
186			Skin-leg	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
187	1	M	R arm	Juvenile xanthogranuloma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
187				Juvenile xanthogranuloma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
188	34	M	Sella	Glioblastoma	High grade	NF1	POSITIVE	ALT	Preserved	1	1	1
189	44	F	retroperitoneum	MPNST	High grade	NF1	NEGATIVE	Short	Preserved		1	1
189	44	F	L hip-skin	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1
189	44	F	R leg-skin	Diffuse neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1
189	44	F	Liver	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal		1	1	1
189	44	F	L adrenal-	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1
190	40	M	R frontal lobe	Diffuse Astrocytoma	Low grade	NF1			Partial loss	1	1	1
191	18	M	Pelvis	MPNST	High grade	NF1	NEGATIVE	Short	Preserved	1	1	1
191	18	M	Pelvis	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
192	58	M	R arm	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
192	58	M	R forehead	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
193	53	M	L thigh	ANNUBP	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
193	53	M	Tibial nerve	Schwannoma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
193	55	M	Chest wall	MPNST	High grade	NF1	NEGATIVE	Short		1	1	1
194	53	F	Lung	MPNST	High grade	NF1	NEGATIVE	Short	Preserved	1	1	3
195	25	F	R neck	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
196	41	M	L arm	Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal	Partial loss		1	1

196	41	M	R forearm	Cutaneous neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved		1	1
196	41	M	R median nerve	Localized intraneural neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1	1
196	41	M		Plexiform neurofibroma	Benign	NF1	NEGATIVE	Normal			1	1
197	59	M	duodenum	Neuroendocrine tumor		NF1	NEGATIVE	Normal		1	1	1
198	52	F	ampulla	Neuroendocrine tumor	Low grade	NF1	NEGATIVE	Short		1	1	1
199	61	F	duodenum	Neuroendocrine tumor	Low grade	NF1	NEGATIVE	Normal		1	1	1
200	46	M	duodenum	Neuroendocrine tumor		NF1	NEGATIVE	Short		1	1	1
201	40	M	ampulla	Neuroendocrine tumor	Low grade	NF1	NEGATIVE	Short		1	1	1
202	55	M	ampulla	Neuroendocrine tumor	Low grade	NF1	NEGATIVE	Short		1	1	1
203	42	F	retroperitoneal	MPNST	High grade	NF1			Preserved	Preserved	1	1
204	29	F	thigh	MPNST	High grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1
205	40	M	retroperitoneal	MPNST	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1
206	44	M	sacrum	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
207	31	M	thigh	MPNST	High grade	NF1	NEGATIVE			Preserved	1	1
208	45	F	thigh	MPNST	High grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1
209	49	F	spine	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
210	43	F	brachial plexus	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
211	11	M	retroperitoneal	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
212	43	M	retroperitoneal	MPNST	High grade	NF1	POSITIVE	ALT	Partial loss	Preserved	1	1
213	27	F	retroperitoneal	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
214	60	F	face	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
215	23	M	arm	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
216	31	M	thigh	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
217	47	F	spine	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
218	34	F	tibia	MPNST	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1
219	22	M	spine	MPNST	Low grade	NF1	NEGATIVE		Preserved	Preserved	1	1
220	49	F	sacrum	MPNST	High grade	NF1	POSITIVE	ALT	Preserved	Preserved	1	1
221	33	F	back	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
222	43	M	forearm	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
223	35	F	neck	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
224	33	M	shoulder	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
225	38	F	sacrum	MPNST	High grade	NF1	NEGATIVE		Partial loss	Preserved	1	1
226	29	M	neck	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
227	37	M	spine	MPNST	High grade	NF1	NEGATIVE			Preserved	1	1
228	13	F	mediastinum	MPNST	High grade	NF1	NEGATIVE		Preserved	Preserved	1	1
229	42	F	sacrum	MPNST	High grade	Sporadic	NEGATIVE		Preserved	Preserved	1	1

230	33	M	mediastinum	MPNST	High grade	Sporadic	POSITIVE	ALT	Loss	Preserved	1	1	
231	35	M	thigh	MPNST	High grade	.	NEGATIVE		Preserved	Preserved	1	1	
232	53	F	brachial plexus	MPNST	High grade	Sporadic	NEGATIVE		Partial loss	Preserved	1	1	
233	65	F	chest wall	MPNST	High grade	Sporadic					1	1	
234	49	M	brachial plexus	MPNST	High grade	Sporadic	NEGATIVE		Partial loss	Partial loss	1	1	
235	43	F	thigh	MPNST	High grade	Sporadic					1	1	
236	57	F	thigh	MPNST	High grade	Sporadic	NEGATIVE		Preserved	Preserved	1	1	
237	72	F	thigh	MPNST	High grade	Sporadic	NEGATIVE		Preserved	Partial loss	1	1	
238	23	F	calf	MPNST	High grade	Sporadic	NEGATIVE		Preserved	Preserved	1	1	
239	36	F	retroperitoneal	MPNST	High grade	Sporadic	POSITIVE	ALT	Preserved	Preserved	1	1	
240	32	F	retroperitoneal	MPNST	High grade	Sporadic	NEGATIVE		Preserved	Preserved	1	1	
241	49	M	ST-neck	MPNST	High grade		NEGATIVE				1	1	1
242	28	F	ST-neck	MPNST	High grade		NEGATIVE				1	1	1
243	27	F	ST-chest wall	MPNST	High grade		POSITIVE	ALT			1	1	1
244	77	M	ST-axilla	MPNST	Low grade		NEGATIVE				1	1	1
245	37	F	ST-pelvis	MPNST	High grade		NEGATIVE				1	1	1
246	44	M	ST-neck	MPNST	High grade		NEGATIVE				1	1	1
247	66	M	Lung-met	MPNST	High grade		NEGATIVE				1	1	3
248	43	F	ST-brachial p.	MPNST	High grade		NEGATIVE				1	1	1
249	37	F	ST-pelvis	MPNST	High grade		NEGATIVE				1	1	2
250	39	M	ST-pelvis	MPNST	High grade		NEGATIVE				1	1	1
251	76	M	ST-paraspinal	MPNST	High grade		POSITIVE	ALT			1	1	1
252	73	M	ST-shoulder	MPNST	High grade		NEGATIVE				1	1	1
253	34	F	ST-thigh	MPNST	High grade		NEGATIVE				1	1	1
254	51	F	ST-chest wall	MPNST	High grade		NEGATIVE				1	1	1
255	36	F	ST-chest wall	MPNST	High grade		NEGATIVE				1	1	1
256	59	M	ST-arm	MPNST	High grade		POSITIVE	ALT			1	1	1
257	38	M	ST-pelvis	MPNST	High grade		NEGATIVE				1	1	1
258	26	F	ST-arm	MPNST	High grade		NEGATIVE				1	1	2
259	56	M	ST-chest wall	MPNST	High grade		POSITIVE	ALT			1	1	1
260	74	F	ST-thigh	MPNST	High grade		POSITIVE	ALT			1	1	2
261	23	M	ST-mediastinum	MPNST	High grade		NEGATIVE				1	1	1
262	23	F	ST-infratemp.	MPNST	High grade		NEGATIVE				1	1	1
263	16	F	Lymph node	MPNST	High grade		NEGATIVE				1	1	3
264	51	F	Lymph node	MPNST	High grade		POSITIVE	ALT			1	1	3
265	15	M	ST-inguinal	MPNST	High grade	NFI	NEGATIVE				1	1	1

266	43	M	ST-paraspinal	MPNST	High grade		POSITIVE	ALT	1	1	1
267	32	M	ST-chest wall	MPNST	High grade	NF1	NEGATIVE		1	1	1
268	24	F	ST-pelvis	MPNST	High grade	NF1	NEGATIVE		1	1	1
269	77	F	ST-orbit	MPNST	Low grade		POSITIVE	ALT	1	1	1
270	29	F	ST-thigh	MPNST	High grade	NF1	NEGATIVE		1	1	1
271	34	F	ST-leg	MPNST	High grade		NEGATIVE		1	1	1
272	31	M	ST-retroperitoneum	MPNST	High grade	NF1	NEGATIVE		1	1	1
273	33	M	Skin-clavicle	MPNST	Low grade		NEGATIVE		1	1	1
274	71	F	ST-abd.	MPNST	High grade	NF1	NEGATIVE		1	1	1
275	21	F	ST-paraspinal	MPNST	High grade	NF1	NEGATIVE		1	1	1
276	16	M	ST-mediast.	MPNST	Low grade	NF1	NEGATIVE		1	1	1
277	33	F	ST-brach. pl.	MPNST	High grade	NF1	NEGATIVE		1	1	1
278	48	F	ST-buttock	MPNST	High grade		NEGATIVE		1	1	1
279	65	F	ST-peroneal n.	MPNST	Low grade		NEGATIVE		1	1	1
280	3	M	ST-forearm	MPNST	High grade		NEGATIVE		1	1	1
281	48	M	Diaphragm	MPNST	High grade		NEGATIVE		1	1	1
282	52	M	ST-paraspinal	MPNST	High grade		NEGATIVE		1	1	1
283	62	F	ST-brach. pl.	MPNST	High grade		NEGATIVE		1	1	1
284	24	M	ST-neck	MPNST	High grade	NF1	NEGATIVE		1	1	1
285	68	M	ST-arm	MPNST	High grade		NEGATIVE		1	1	1
286	42	F	ST-brach. pl.	MPNST	High grade		NEGATIVE		1	1	1
287	47	M	ST-mediast.	MPNST	High grade		NEGATIVE		1	1	1
288	25	M	ST-retroperit.	MPNST	High grade	NF1	NEGATIVE		1	1	1
289	43	M	ST-back	MPNST	High grade	NF1	NEGATIVE		1	1	1
290	33	F	ST-back	MPNST	High grade	NF1	NEGATIVE		1	1	1
291	40	M	ST-back	MPNST	High grade		NEGATIVE		1	1	1
292	31	F	ST-thigh	MPNST	High grade	NF1	NEGATIVE		1	1	1
293	33	M	ST-retroperit.	MPNST	High grade	NF1	POSITIVE	ALT	1	1	1
293	33	M	ST-retroperit.	MPNST	High grade	NF1	POSITIVE	ALT			2
294	47	F	ST-brach. pl.	Epithelioid MPNST	High grade		NEGATIVE		1	1	1
295	74	F	ST-brach. pl.	MPNST	High grade		NEGATIVE		1	1	1
296	49	M	ST-abdomen	MPNST	High grade	NF1	NEGATIVE		1	1	1
296	51	M	ST-axilla	MPNST	High grade	NF1	NEGATIVE			1	1
296	51	M	ST-axilla	MPNST	High grade	NF1	NEGATIVE				2
297	30	M	ST-neck	MPNST	High grade		NEGATIVE		1	1	1
297	30	M	ST-neck	MPNST	High grade		NEGATIVE				2



298	38	F	ST-femoral	MPNST	High grade		NEGATIVE		1	1	1
298	43	F	ST-femoral	MPNST	High grade		NEGATIVE				
299	46	M	ST-pelvis	MPNST	Low grade		NEGATIVE		1	1	1
300	41	F	ST-thigh	MPNST	High grade		NEGATIVE				2
300	37	F	ST-thigh	MPNST	Low grade		NEGATIVE		1	1	1
300	39	F	ST-groin	MPNST	Low grade		NEGATIVE				2
301	25	M	ST-chest wall	MPNST	High grade	NF1	NEGATIVE			1	1
301	21	M	ST-sciatic n.	MPNST	Low grade	NF1			1	1	1
302	46	F	ST-thigh	MPNST	High grade		NEGATIVE		1	1	1
302	46	F	Lung-met	MPNST	High grade		NEGATIVE			1	3
303	58	M	ST-femoral	MPNST	High grade		POSITIVE	ALT	1	1	1
303	58	M	ST-femoral	MPNST	High grade		POSITIVE	ALT			2
304	81	F	ST-leg	MPNST	High grade		POSITIVE	ALT	1	1	1
304	86	F	ST-leg	MPNST	High grade		POSITIVE	ALT			2
304	86	F	ST-groin	MPNST	High grade		POSITIVE	ALT			3
305	42	M	ST-sciatic n.	MPNST	High grade		NEGATIVE		1	1	1
306	60	F	ST-infratemp.	MPNST	High grade		NEGATIVE		1	1	1
306	60	F	ST-shoulder-met	MPNST	High grade		NEGATIVE				3
307	49	F	ST-arm	MPNST	High grade		POSITIVE	ALT	1	1	1
307	49	F	Pleura-met	MPNST	High grade		NEGATIVE			1	3
308	18	M	ST-buttock	MPNST	High grade		NEGATIVE				2
308	17	M	ST-buttock	MPNST	Low grade		NEGATIVE		1	1	2
309	35	M	ST-chest wall	MPNST	High grade		NEGATIVE		1	1	1
309	37	M	Bone-met	MPNST	High grade		NEGATIVE			1	2
310	46	F	ST-arm	MPNST	High grade		POSITIVE	ALT	1	1	1
311	23	F	ST-thigh	MPNST	High grade	NF1	NEGATIVE		1	1	1
312	48	M	ST-buttock	MPNST	High grade		POSITIVE	ALT	1	1	1
313	59	F	ST-chest wall	MPNST	High grade	NF1	NEGATIVE			1	1
314	68	M	ST-thigh	MPNST	High grade		POSITIVE	ALT	1	1	1
315	21	F	ST-skull base	MPNST	Low grade	NF1	NEGATIVE		1	1	1
316	34	M	ST-arm	MPNST	High grade		NEGATIVE				1
316	34	M	ST-paraspinal	MPNST	High grade		NEGATIVE				1
317	1	F	ST-paraspinal	MPNST	High grade		NEGATIVE		1	1	1
318	9	M	ST-leg	MPNST	High grade		NEGATIVE				1
319	17	F	Lung	MPNST	High grade	NF1					3
319	16	F	ST-thigh	MPNST	High grade	NF1	NEGATIVE		1	1	1

320	13	F	Lung + parasp.	MPNST	High grade	NF1	NEGATIVE			1	3
321	12	F	ST-back	MPNST	High grade	NF1	NEGATIVE			1	1
322	81	M	ST-thigh	Epithelioid MPNST	High grade		POSITIVE	ALT			1
323	24	F	ST-abd.	MPNST	High grade	NF1	POSITIVE	ALT		1	1
323	24	F	ST-abd.	MPNST	High grade	NF1	POSITIVE	ALT			2
323	25	F	Bowel	MPNST	High grade	NF1	POSITIVE	ALT			2
323	26	F	Bowel	MPNST	High grade	NF1	POSITIVE	ALT			2
324	11	F	ST-thigh	MPNST	Low grade	NF1	NEGATIVE			1	1
324	13	F	ST-thigh	MPNST	Low grade	NF1	NEGATIVE				2
325	36	F	ST-brach. pl.	MPNST	High grade		NEGATIVE				1
326	17	F	ST-paraspinal	MPNST	High grade		NEGATIVE			1	1
326	17	F	ST-paraspinal	MPNST	High grade		NEGATIVE				2
326	18	F	ST-paraspinal	MPNST	High grade		NEGATIVE				2
326	18	F	ST-paraspinal	MPNST	High grade		NEGATIVE				2
326	18	F	ST-paraspinal	MPNST	High grade		NEGATIVE				2
327	37	M	buttock	Massive soft tissue neurofibroma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1
328	10	F	Scalp	MPNST with divergent differentiation	High grade	NF1	NEGATIVE	Normal	Preserved	1	1
329	14	M	third ventricle	Pilocytic astrocytoma	Low grade	NF1	NEGATIVE	Long	Preserved	1	1
330	24	M	cerebellum	Pilocytic astrocytoma with anaplasia	High grade	NF1	POSITIVE	ALT	Loss	1	1
331	11	F	R occipital lobe	Pilocytic astrocytoma with anaplasia	High grade	NF1	NEGATIVE		Preserved	1	1
332	18	M	L parietal lobe	Pilocytic astrocytoma with anaplasia	High grade	NF1	NEGATIVE		Preserved	1	1
333	21	M	small bowel	GIST	Low grade	NF1	NEGATIVE	Normal		1	1
334	35	M	CP angle	Pilocytic astrocytoma with anaplasia	High grade	NF1	POSITIVE	ALT	Loss	1	1
335	18	F	breast	Malignant Phylloides tumor	High grade	NF1	POSITIVE	ALT	Preserved		
336	79	F	Stomach	Gastric Schwannoma	Benign	NF1	NEGATIVE	Normal	Preserved	1	1
337	79	F	Stomach	GIST	Low grade	NF1	NEGATIVE	Short	Preserved		1

**Table S2. Next generation sequencing results of ALT positive NF1-associated gliomas and MPNST (n=9)**

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 78-MPNST	chr17:29508438	A>G	splicing	NF1	NM_000267 : c.587-2A>G		27,11/31,23	41.3	58.7	512.31
CASE 78-MPNST	chr4:87968606	C>G	exonic	AFF1	NM_001166693.2 : c.C919G	p.Q307E	9,15/111,121	9.38	90.62	1975.36
CASE 78-MPNST	chr18:50450208	G>A	exonic	DCC	NM_005215 : c.G829A	p.E277K	9,16/22,20	37.31	62.69	553.58
CASE 78-MPNST	chr11:108788634	G>GTGATGA	exonic	DDX10	NM_004398 : c.2363_2364insTGATGA	p.D788_G789insDD	18,11/57,42	22.66	77.34	544.29
CASE 78-MPNST	chr4:153253751	C>T	exonic	FBXW7	NM_033632 : c.G982A	p.E328K	7,7/52,61	11.02	88.98	682.26
CASE 78-MPNST	chr5:180053190	G>C	exonic	FLT4	NM_182925 : c.C1179G	p.S393R	46,49/42,49	51.08	48.92	888.36
CASE 78-MPNST	chr2:240002870	C>T	exonic	HDAC4	NM_006037 : c.G2656A	p.V886M	69,60/49,51	56.33	43.67	988.56
CASE 78-MPNST	chr17:45377872	C>T	exonic	ITGB3	NM_000212 : c.C1942T	p.R648W	32,32/34,28	50.79	49.21	1071.05
CASE 78-MPNST	chr6:15496478	C>T	exonic	JARID2	NM_004973 : c.C1022T	p.T341M	32,31/36,40	45.32	54.68	1499.22
CASE 78-MPNST	chr19:36214639	C>T	exonic	KMT2B	NM_014727 : c.C3065T	p.T1022M	58,31/38,32	55.97	44.03	633.4
CASE 78-MPNST	chr3:46480815	C>T	exonic	LTF	NM_002343 : c.G1880A	p.R627H	51,33/42,30	53.85	46.15	844.98
CASE 78-MPNST	chr17:5442764	C>G	exonic	NLRP1	NM_033004 : c.G2841C	p.R947S	67,56/45,39	59.42	40.58	834.55
CASE 78-MPNST	chr1:186644489	C>T	exonic	PTGS2	NM_000963 : c.G1297A	p.V433I	22,28/23,37	45.45	54.55	868.82
CASE 78-MPNST	chr8:145741989	G>A	exonic	RECQL4	NM_004260 : c.C514T	p.L172F	46,58/45,42	54.45	45.55	1068.43
CASE 78-MPNST	chr8:145743144	C>T	exonic	RECQL4	NM_004260 : c.G25A	p.E9K	4,11/3,10	53.57	46.43	107.88
CASE 78-MPNST	chr18:42281466	G>A	exonic	SETBP1	NM_015559 : c.G155A	p.G52E	72,66/54,57	55.42	44.58	1090.07
CASE 78-MPNST	chr1:144994694	T>C	exonic	PDE4DIP	NM_014644 : c.38A>G	p.N13S	41,42/224,231	15.43	84.57	2336.7
ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 53-MPNST	chrX:76937963	G>C	exonic	ATRX	NM_000489.4 : c.C2785G	p.Q929E	244,313/129,134	67.93	32.07	1223.62
CASE 53-MPNST	chr2:29606597	C>A	splicing	ALK	NM_004304.4 : c.1282+1G>T	p.?	194,120/316,235	36.3	63.7	958.39
CASE 53-MPNST	chr17:29585446	T>TCACC	exonic	NF1	NM_000267.3 : c.4200_4204insCACC	p.Y1401Tfs*2	198,235/426,547	30.8	69.2	1067.92
CASE 53-MPNST	chr17:7577139	G>A	exonic	TP53	NM_000546.5 : c.C799T	p.R267W	77,184/115,225	43.43	56.57	1135.22
CASE 53-MPNST	chr16:2134269	C>T	exonic	TSC2	NM_000548.4 : c.C4046T	p.A1349V	15,10/201,172	6.28	93.72	558.6
CASE 53-MPNST	chrX:39933843	G>T	exonic	BCOR	NM_017745.5 : c.C756A	p.Y252*	135,153/294,260	34.2	65.8	1123.94
CASE 53-MPNST	chr12:121881950	C>G	exonic	KDM2B	NM_032590.4 : c.G2316C	p.E772D	286,246/238,226	53.41	46.59	920.01
CASE 53-MPNST	chr5:176637570	G>A	exonic	NSD1	NM_022455.4 : c.G2170A	p.E724K	132,110/390,415	23.11	76.89	1342.3
CASE 53-MPNST	chr8:48815306	C>T	exonic	PRKDC	NM_006904.6 : c.G3092A	p.R1031Q	59,82/273,350	18.46	81.54	964.06
CASE 53-MPNST	chr9			CDKN2A/B						Homozygous loss
CASE 53-MPNST	chr17			TP53						Heterozygous loss
ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 110-MPNST	chr1:40366764	GAGCGAGCCGGTCTCACAGCTCTCTCC>G	exonic	MYCL	NM_001033082.2 : c.405_432del	p.E136Lfs*59	5,5/70,69	6.71	93.29	555.99

CASE 110-MPNST	chr11:108546344	G>A	exonic	DDX10	NM_004398 : c.G269A	p.R90H	12,5/17,13	36.17	63.83	246.24
CASE 110-MPNST	chr11:119167694	G>T	exonic	CBL	NM_005188 : c.G2103T	p.M70I	16,11/11,19	47.37	52.63	371.64
CASE 110-MPNST	chr11:94180441	C>T	exonic	MRE11A	NM_005591 : c.G1727A	p.R576Q	15,14/20,15	45.31	54.69	536.91
CASE 110-MPNST	chr13:103492133	C>T	exonic	BIVM- ERCC5	NM_001204425 : c.C1430T	p.S477L	17,22/18,23	48.75	51.25	998.43
CASE 110-MPNST	chr15:91346819	G>A	exonic	BLM	NM_000057 : c.G3427A	p.E1143K	13,14/23,25	36	64	571.56
CASE 110-MPNST	chr16:2983556	G>A	exonic	FLYWCH1	NM_032296 : c.G1219A	p.E407K	20,21/42,48	31.3	68.7	925.6
CASE 110-MPNST	chr16:68772311	A>G	exonic	CDH1	NM_004360 : c.A160G	p.R54G	25,20/21,34	45	55	386.4
CASE 110-MPNST	chr16:9857094	T>C	exonic	GRIN2A	NM_000833 : c.A4307G	p.N1436S	9,8/17,19	32.08	67.92	620.08
CASE 110-MPNST	chr17:29677200	G>A	splicing	NF1	NM_000267 : c.7259-1G>A		12,10/8,8	57.89	42.11	522.21
CASE 110-MPNST	chr17:5463285	G>A	exonic	NLRP1	NM_033004 : c.C731T	p.A244V	7,7/42,44	14	86	687.81
CASE 110-MPNST	chr17:75478271	C>T	exonic	SEPT9	NM_001113491.1 : c.767C>T	p.P256L	85,78/88,82	48.95	51.05	1507.52
CASE 110-MPNST	chr17:76212770	G>A	exonic	BIRC5	NM_001168 : c.G247A	p.G83S	21,27/27,48	39.02	60.98	756.65
CASE 110-MPNST	chr18:59221719	G>T	exonic	CDH20	NM_031891 : c.G2197T	p.A733S	31,29/49,46	38.71	61.29	940.94
CASE 110-MPNST	chr2:202123045	G>T	exonic	CASP8	NM_001080125 : c.G91T	p.V31L	26,24/64,52	30.12	69.88	848.56
CASE 110-MPNST	chr2:216288177	T>C	exonic	FN1	NM_212482 : c.A1289G	p.N430S	6,7/20,21	24.07	75.93	378.7
CASE 110-MPNST	chr2:216299526	T>C	exonic	FN1	NM_212482 : c.A170G	p.K57R	20,42/13,13	70.45	29.55	806.6
CASE 110-MPNST	chr3:30691871	GA>G	exonic	TGFBR2	NM_003242 : c.374delA	p.K128Sfs*35	10,15/54,62	17.73	82.27	1590.71
CASE 110-MPNST	chr3:52643618	G>A	exonic	PBRM1	NM_018313 : c.C2278T	p.R760C	7,7/18,21	26.42	73.58	800.04
CASE 110-MPNST	chr5:149503816	C>T	exonic	PDGFRB	NM_002609 : c.G2020A	p.G674R	26,28/40,44	39.13	60.87	853.42
CASE 110-MPNST	chr5:180036005	G>C	exonic	FLT4	NM_182925 : c.C3856G	p.Q1286E	8,8/29,29	21.62	78.38	445.09
CASE 110-MPNST	chr5:56176912	T>C	exonic	MAP3K1	NM_005921 : c.T2182C	p.S728P	17,16/24,18	44	56	682.1
CASE 110-MPNST	chr6:106553314	G>A	exonic	PRDM1	NM_001198 : c.G1279A	p.A427T	29,26/50,51	35.26	64.74	1750.92
CASE 110-MPNST	chr6:51771137	C>G	exonic	PKHD1	NM_138694.3 : c.G6684C	p.E2228D	12,14/14,12	50	50	271.32
CASE 110-MPNST	chr7:80299305	AGGTATTGCAGTCTTTTCTCT>A	exonic	CD36	NM_000072 : c.787_808del	p.V263Ifs*16	9,10/26,32	24.68	75.32	712.74
CASE 110-MPNST	chr8:113657421	C>T	exonic	CSMD3	NM_198123 : c.3227G>A	p.G1076E	14,22/16,29	44.44	55.56	426.28
CASE 110-MPNST	chr8:30916743	C>A	exonic	WRN	NM_000553 : c.C171A	p.Y57X	13,17/21,23	40.54	59.46	909.72
CASE 110-MPNST	chr9:21971208	C>G	splicing	CDKN2A	NM_000077 : c.151-1G>C		9,11/14,27	32.79	67.21	424.69
CASE 110-MPNST	chrX:76939216	TC>T	exonic	ATRX	NM_000489 : c.1531delG	p.E511Kfs*3	8,8/22,19	28.07	71.93	750.5

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	% VAF	% RAF	Avg Cov
Case 130-GLIOMA	chr2:100210342	CCTCAGCC>GC	exonic	AFF3	NM_1025108 : c.1856_1863delinsGC	p.T619_A621delinsS	6,6/41,33	14	86	514.98
Case 130-GLIOMA	chr19:6586291	T>C	exonic	CD70	NM_001252 : c.A322G	p.I108V	22,38/67,56	32.79	67.21	287.15
Case 130-GLIOMA	chr16:68842734	C>T	exonic	CDH1	NM_004360 : c.C670T	p.R224C	53,57/21,29	68.75	31.25	516.11
Case 130-GLIOMA	chr7:142562051	CCCT>C	exonic	EPHB6	NM_004445 : c.497_499delCCCT	p.S177del	28,28/78,76	26.67	73.33	542.61
Case 130-GLIOMA	chrX:48652297	G>A	exonic	GATA1	NM_002049 : c.G968A	p.G323D	8,6/73,79	8.43	91.57	253.77

Case 130-GLIOMA	chr12:49423224	C>A	exonic	KMT2D	NM_003482 : c.G14035T	p.A4679S	42,67/43,63	50.7	49.3	326.47
Case 130-GLIOMA	chr17:36881009	C>T	exonic	MLLT6	NM_005937 : c.C3020T	p.A1007V	25,51/8,24	70.37	29.63	182.95
Case 130-GLIOMA	chr20:46265162	T>G	exonic	NCOA3	NM_181659 : c.T2032G	p.L678V	52,46/103,96	33	67	946.39
Case 130-GLIOMA	chr17:29677208	T>TA	exonic	NF1	NM_000267 : c.7266_7267insA	p.T2423Nfs	88,77/145,125	37.93	62.07	789.67
Case 130-GLIOMA	chr15:88472622	G>A	exonic	NTRK3	NM_001012338 : c.C1933T	p.R645C	37,82/56,89	45.08	54.92	642.77
Case 130-GLIOMA	chr15:88476307	C>T	exonic	NTRK3	NM_001012338 : c.G1825A	p.D609N	91,72/87,90	47.94	52.06	621.8
Case 130-GLIOMA	chr1:144881463	C>T	exonic	PDE4DIP	NM_001198834 : c.G3733A	p.A1245T	48,16/234,144	14.48	85.52	784.55
Case 130-GLIOMA	chr5:149516594	G>A	exonic	PDGFRB	NM_002609 : c.C17T	p.A6V	30,26/33,39	43.75	56.25	138.31
Case 130-GLIOMA	chr12:7067226	G>A	exonic	PTPN6	NM_080548 : c.G1357A	p.V453M	45,84/38,62	56.33	43.67	305.78
Case 130-GLIOMA	chr8:145737579	G>A	exonic	RECQL4	NM_004260 : c.C3184T	p.R1062W	48,39/47,35	51.48	48.52	246.5
Case 130-GLIOMA	chr3:128369613	G>C	exonic	RPN1	NM_002950 : c.C31G	p.L11V	26,40/14,28	61.11	38.89	174.54
Case 130-GLIOMA	chr17:78765287	G>A	exonic	RPTOR	NM_020761 : c.G868A	p.V290I	106,120/44,37	73.62	26.38	628.62
Case 130-GLIOMA	chr16:2138543	C>T	exonic	TSC2	NM_000548 : c.C5356T	p.P1786S	20,19/42,51	29.55	70.45	198.42

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt <sup>+</sup> -Alt- /Ref <sup>+</sup> ,Ref-	%VAF	%RAF	Avg Cov
CASE 132-GLIOMA	chr22:23654020	G>A	exonic	BCR	NM_004327 : c.G3319A	p.V1107I	26,71/160,249	19.17	80.83	674.58
CASE 132-GLIOMA	chr17:33281597	C>T	exonic	CCT6B	NM_006584 : c.G358A	p.A120T	85,217/37,81	71.9	28.1	686.68
CASE 132-GLIOMA	chr7:100421430	C>T	exonic	EPHB4	NM_004444 : c.G247A	p.A83T	56,69/60,68	49.41	50.59	263.24
CASE 132-GLIOMA	chr6:108984811	A>T	exonic	FOXO3	NM_001455 : c.A775T	p.K259X	42,46/234,265	14.99	85.01	1021
CASE 132-GLIOMA	chr5:35867528	G>C	exonic	IL7R	NM_002185 : c.G342C	p.K114N	154,114/204,123	45.04	54.96	673.08
CASE 132-GLIOMA	chr16:85945187	G>A	exonic	IRF8	NM_002163 : c.G370A	p.V124M	119,63/130,78	46.67	53.33	422.77
CASE 132-GLIOMA	chr8:41794939	G>A	exonic	KAT6A	NM_006766 : c.C3187T	p.P1063S	110,173/156,192	44.85	55.15	776.09
CASE 132-GLIOMA	chr10:129904142	G>C	exonic	MKI67	NM_002417 : c.C5962G	p.P1988A	141,163/387,458	26.46	73.54	1939.67
CASE 132-GLIOMA	chr5:79950727	GCAGCGCCCC>G	exonic	MSH3	NM_002439 : c.182_190delCAGCGCCCC	p.P67_P69del	4,76/48,160	27.78	72.22	358.86
CASE 132-GLIOMA	chr17:29560088	CA>C	exonic	NF1	NM_000267 : c.3566delA	p.G1190Afs	266,198/130,114	65.54	34.46	937.71
CASE 132-GLIOMA	chr5:176638736	C>G	exonic	NSD1	NM_172349 : c.C2529G	p.S843R	213,240/227,244	49.03	50.97	1147.75
CASE 132-GLIOMA	chr2:242045997	C>T	exonic	PASK	NM_015148 : c.G3956A	p.R1319H	59,25/158,86	25.61	74.39	387.46
CASE 132-GLIOMA	chr2:242065799	G>T	exonic	PASK	NM_015148 : c.C2531A	p.P844Q	113,97/51,44	68.85	31.15	353.56
CASE 132-GLIOMA	chr2:242065986	C>G	exonic	PASK	NM_015148 : c.G2344C	p.G782R	49,39/147,132	23.98	76.02	353.56
CASE 132-GLIOMA	chr13:49030416	C>A	exonic	RB1	NM_000321 : c.C1891A	p.Q631K	147,94/338,323	26.72	73.28	1069.43
CASE 132-GLIOMA	chrX:128605236	C>G	exonic	SMARCA1	NM_003069 : c.G2510C	p.G837A	210,167/237,223	45.04	54.96	949.4
CASE 132-GLIOMA	chr22:38374092	A>T	exonic	SOX10	NM_006941 : c.T479A	p.L160H	5,8/41,96	8.67	91.33	179.27

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt <sup>+</sup> -Alt- /Ref <sup>+</sup> ,Ref-	%VAF	%RAF	Avg Cov
CASE 60-GLIOMA	chrX:1522163	CA>C	exonic	ASMTL	NM_004192 : c.1864delT	p.X622Efs	208,76/14,1	94.98	5.02	787.06

CASE 60-GLIOMA	chrX:1531700	A>T	exonic	ASMTL	NM_004192 : c.T1570A	p.C524S	104,123/136,165	42.99	57.01	916.44
CASE 60-GLIOMA	chr12:113531455	C>T	exonic	DTX1	NM_004416 : c.C1115T	p.P372L	52,37/60,51	44.5	55.5	194
CASE 60-GLIOMA	chr3:10089607	A>G	exonic	FANCD2	NM_001018115 : c.A1285G	p.K429E	60,36/371,211	14.16	85.84	1297.93
CASE 60-GLIOMA	chr11:22646561	G>A	exonic	FANCF	NM_022725 : c.C796T	p.R266C	144,158/192,169	45.55	54.45	1005.19
CASE 60-GLIOMA	chr9:35076975	C>T	exonic	FANCG	NM_004629 : c.G770A	p.R257H	115,99/129,104	47.87	52.13	612.39
CASE 60-GLIOMA	chr2:216235046	C>T	exonic	FN1	NM_212482 : c.G6824A	p.R2275Q	126,110/56,37	71.73	28.27	479.43
CASE 60-GLIOMA	chr6:108882647	TCGGCGG>T	exonic	FOXO3	NM_001455 : c.237_242delCGGCGG	p.G83_G84del	39,35/73,89	31.36	68.64	221.03
CASE 60-GLIOMA	chr6:108882706	C>T	exonic	FOXO3	NM_001455 : c.C295T	p.R99W	16,56/32,83	38.5	61.5	221.03
CASE 60-GLIOMA	chr20:57429696	C>G	exonic	GNAS	NM_080425 : c.C1376G	p.P459R	21,36/9,31	58.76	41.24	233.58
CASE 60-GLIOMA	chr12:49445189	TGGCTCCTCAGCCGGGGGACAGGTGC>T	exonic	KMT2D	NM_003482 : c.2250_2276delGCACCTGTCCCCCGGCTGAGGAGCC	p.R755_P763del	50,64/176,220	30.32	69.68	912.65
CASE 60-GLIOMA	chr3:65415516	C>T	exonic	MAG1 (BAP1)	NM_001033057 : c.G1846A	p.V616M	49,50/170,194	21.38	78.62	891.56
CASE 60-GLIOMA	chr3:38181894	G>A	exonic	MYD88	NM_001172567 : c.G518A	p.R173H	126,66/64,38	65.31	34.69	603.23
CASE 60-GLIOMA	chr17:29559089	A>G	splicing	NF1	NM_000267 : c.3198-2A>G	p.?	86,27/35,15	69.33	30.67	465.85
CASE 60-GLIOMA	chr9:139417431	C>G	exonic	NOTCH1	NM_017617 : c.G613C	p.V205L	45,33/46,27	51.66	48.34	187.06
CASE 60-GLIOMA	chr2:242065799	G>T	exonic	PASK	NM_015148 : c.C2531A	p.P844Q	84,64/38,26	69.81	30.19	310.12
CASE 60-GLIOMA	chr2:242046785	A>C	exonic	PASK	NM_015148 : c.T3797G	p.F1266C	158,89/1,1	100	0	348.68
CASE 60-GLIOMA	chr1:144854574	T>C	exonic	PDE4DIP	NM_001198834 : c.A6896G	p.H2299R	65,95/463,491	14.36	85.64	1439.05
CASE 60-GLIOMA	chr8:145736909	C>A	exonic	RECQL4	NM_004260 : c.G3532T	p.G1178W	59,73/16,27	75.43	24.57	205.73
CASE 60-GLIOMA	chr7:92733601	G>A	exonic	SAMD9	NM_001193307 : c.C1810T	p.Q604X	196,196/186,180	51.72	48.28	1811.59
CASE 60-GLIOMA	chr12:54577514	G>C	exonic	SMUG1	NM_001243788 : c.C211G	p.R71G	109,129/113,154	47.13	52.87	576.61
CASE 60-GLIOMA	chr1:16260917	G>A	exonic	SPEN	NM_015001 : c.G8182A	p.A2728T	103,101/31,35	75.56	24.44	811.5
CASE 60-GLIOMA	chrX:48887947	C>T	exonic	TFE3	NM_006521 : c.G1450A	p.A484T	78,57/57,76	50.37	49.63	290.26

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt-/Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 134-GLIOMA	chr6:157099260	A>G	exonic	ARID1B	NM_020732 : c.A197G	p.N66S	9,24/15,22	47.14	52.86	92.12
CASE 134-GLIOMA	chrX:76856021	T>C	exonic	ATRX	NM_000489 : c.A5579G	p.N1860S	176,240/1,1	100	0	494.65
CASE 134-GLIOMA	chrX:129147373	G>A	exonic	BCORL1	NM_021946 : c.G625A	p.G209S	151,137/2,1	99.31	0.69	355.95
CASE 134-GLIOMA	chr9:136913474	C>T	exonic	BRD3	NM_007371 : c.G817A	p.A273T	138,137/65,63	68.24	31.76	417.76
CASE 134-GLIOMA	chr12:113515442	A>T	exonic	DTX1	NM_004416 : c.A473T	p.Q158L	59,116/93,147	42.17	57.83	655.05
CASE 134-GLIOMA	chr7:151874751	C>T	exonic	KMT2C	NM_170606 : c.G7787A	p.R2596Q	326,344/364,345	48.59	51.41	1876.38
CASE 134-GLIOMA	chr7:151882672	C>A	exonic	KMT2C	NM_170606 : c.G5053T	p.A1685S	87,63/367,305	18.25	81.75	779.12
CASE 134-GLIOMA	chr12:49445392	G>T	exonic	KMT2D	NM_003482 : c.C2074A	p.P692T	387,290/322,292	52.44	47.56	1444.84
CASE 134-GLIOMA	chr17:29667632	CT>C	exonic	NF1	NM_000267 : c.6969delT	p.L2323X	111,186/61,104	64.29	35.71	576.6
CASE 134-GLIOMA	chr6:32166766	G>A	exonic	NOTCH4	NM_004557 : c.C4472T	p.P1491L	60,49/151,144	26.98	73.02	357.22
CASE 134-GLIOMA	chr1:144855783	G>A	exonic	PDE4DIP	NM_001198834 : c.C6770T	p.A2257V	51,82/215,250	22.24	77.76	659.95

CASE 134-GLIOMA	chr7:128851596	C>G	exonic	SMO	NM_005631 : c.C1921G	p.P641A	24,55/20,69	47.02	52.98	271
CASE 134-GLIOMA	chr10:70332891	C>G	exonic	TET1	NM_030625 : c.C796G	p.P266A	291,248/140,114	67.97	32.03	806.14
CASE 134-GLIOMA	chr10:70406189	G>C	exonic	TET1	NM_030625 : c.G3703C	p.V1235L	294,287/110,101	73.36	26.64	1105.02
CASE 134-GLIOMA	chr8:15605938	C>A	exonic	TUSC3	NM_006765 : c.C992A	p.S331X	49,65/151,173	26.03	73.97	463.88

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 194-GLIOMA	chrX:76872079	ACCTGTAAAGTGATCTAAGTAG>A	exonic	ATRX	NM_000489 : c.5547_5566+1del	p.Y1849*	69,46/320,276	16.17	83.83	649.07
CASE 194-GLIOMA	chr7:101713691	G>A	exonic	CUX1	NM_001913 : c.G295A	p.V99I	166,171/163,175	49.93	50.07	655.16
CASE 194-GLIOMA	chr3:10105516	A>C	exonic	FANCD2	NM_001018115 : c.A1868C	p.Q623P	170,197/450,288	33.21	66.79	1249.54
CASE 194-GLIOMA	chr11:118344240	C>T	exonic	KMT2A	NM_001197104 : c.C2366T	p.T789I	247,287/264,302	48.55	51.45	1452.62
CASE 194-GLIOMA	chr5:79974821	C>T	exonic	MSH3	NM_002439 : c.C1249T	p.R417W	139,192/235,273	39.45	60.55	823.9
CASE 194-GLIOMA	chr17:29588781	GC>G	exonic	NF1	NM_000267 : c.4568delC	p.A1523Dfs*30	272,215/427,408	36.84	63.16	1331.74
CASE 194-GLIOMA	chr17:29664505	CG>C	exonic	NF1	NM_000267 : c.6485delG	p.D2163Tfs*16	175,226/275,301	41.04	58.96	1087.43
CASE 194-GLIOMA	chr9:139411768	C>T	exonic	NOTCH1	NM_017617 : c.G1511A	p.R504H	117,96/121,120	46.92	53.08	387.93
CASE 194-GLIOMA	chr5:131951706	G>T	exonic	RAD50	NM_005732 : c.G3048T	p.R1016S	137,29/123,40	50.46	49.54	482.37
CASE 194-GLIOMA	chr16:2121617	T>C	exonic	TSC2	NM_000548 : c.T1946C	p.M649T	112,181/119,222	46.21	53.79	806.44
CASE 194-GLIOMA	chr9			CDKN2A/B		Homozygous loss				

ID	Chr:Pos	Base Change	Region	Gene	CDS	AA_change	Alt+,Alt- /Ref+,Ref-	%VAF	%RAF	Avg Cov
CASE 351-GLIOMA	chr12:52385751	A>G	exonic	ACVR1B	NM_020328.3 : c.A1489G	p.I497V	350,355/602,699	35.14	64.86	2717.92
CASE 351-GLIOMA	chr20:31024254	C>T	exonic	ASXL1	NM_015338.5 : c.C3739T	p.R1247C	254,298/255,310	49.42	50.58	1984.45
CASE 351-GLIOMA	chrX:76875920	G>A	exonic	ATRX	NM_000489.4 : c.C5215T	p.R1739*	109,170/61,72	67.72	32.28	417.67
CASE 351-GLIOMA	chr6:18249892	C>T	exonic	DEK	NM_003472.3 : c.G752A	p.S251N	167,10/339,38	31.95	68.05	1362.75
CASE 351-GLIOMA	chr6:15496952	C>T	exonic	JARID2	NM_004973.3 : c.C1496T	p.P499L	295,250/288,245	50.56	49.44	1358.12
CASE 351-GLIOMA	chr17:29541603	TGTAA>T	splicing	NF1	NM_000267 : c.1527+1_1527+4delGTAA	p.?	112,227/59,75	71.67	28.33	551.35
CASE 351-GLIOMA	chr17:5462523	C>T	exonic	NLRP1	NM_033004.3 : c.G1493A	p.R498K	213,231/363,386	37.22	62.78	1799.03
CASE 351-GLIOMA	chr7:6018314	TGAGAGT>TGAGC	exonic	PMS2	NM_000535.6 : c.2182_2187delinsGCTC	p.L728Afs*6	42,110/512,474	13.36	86.64	1034.43
CASE 351-GLIOMA	chr7:6035200	A>C	exonic	PMS2	NM_000535.6 : c.T868G	p.F290V	541,308/355,184	61.17	38.83	1723.8
CASE 351-GLIOMA	chr7:103216152	G>C	exonic	RELN	NM_005045.3 : c.C4146G	p.S1382R	153,310/194,326	47.1	52.9	1561.11
CASE 351-GLIOMA	chr7:103275891	G>A	exonic	RELN	NM_005045.3 : c.C2446T	p.L816F	283,107/310,148	45.99	54.01	1328.6
CASE 351-GLIOMA	chrX:70601712	C>T	exonic	TAF1	NM_004606.4 : c.C1540T	p.R514W	281,472/1,1	99.74	0.26	1270.94
CASE 351-GLIOMA	chr10:98133376	C>T	exonic	TLL2	NM_012465.3 : c.G2639A	p.G880D	174,57/236,95	41.1	58.9	838.43
CASE 351-GLIOMA	chr16:2138570	C>T	exonic	TSC2	NM_000548.4 : c.C5383T	p.R1795C	114,185/121,200	48.23	51.77	756.3
CASE 351-GLIOMA	chr9			CDKN2A/B		Homozygous loss				

**Table S3. Telomere alterations in rare NF1-associated tumors (n=46).**

Tumor Type	N	Telomere Abnormalities (%)				ATRX alterations
		ALT	Short	Long	Normal	Loss by IHC
GIST	12	0	5 (42%)	0	7 (58%)	0 (of 6)
Pheochromocytoma	7	0	1 (100%)	0	0	1 (of 4)
Glomus tumor	5	0	0	0	4 (100%)	0 (of 4)
Neuroendocrine tumors	6	0	4 (66%)	0	2 (33%)	No <i>ATRX/DAXX</i> mutations <sup>28</sup>
Lipoma	5	0	0	0	4 (100%)	-
Schwannoma	2	0	0	0	2 (100%)	0 (of 2)
Juvenile xanthogranuloma	3	0	1 (33%)	0	2 (66%)	0 (of 3)
Gangliocytic paraganglioma	2	0	0	0	1 (100%)	-
Dermatofibroma	1	0	0	0	1 (100%)	-
Ovarian serous carcinoma	1	0				0 (of 1)
Syringocystadenoma papilliferum	1	0	0	0	1 (100%)	0 (of 1)
Malignant phyllodes tumor	1	1	0	0	0	0 (of 1)

<sup>28</sup>Noë et al, Modern Pathology, 2018.



**Table S4. Association of telomere length with overall survival in patients with glioma.**

	Death/Censor	Person-time (months)	Univariate*			Multivariate		
			HR	(95% CI)	P-value	HR	(95% CI)	P-value
<b>Age</b>	15/17	2068	1.05	(1.01-1.09)	0.03	1.02	(0.95-1.08)	0.6
<b>Grade</b>								
Low	3/12	1813	1	(Ref)	-	1	(Ref)	-
High	12/15	255	7.36	(2.18-24.77)	0.001	3.09	(0.70-13.60)	0.1
<b>Telomere Length</b>								
Normal	3/10	1392	1	(Ref)	-	1	(Ref)	-
Long	4/3	428	3.99	(0.70-22.77)	0.1	3.2	(0.47-21.92)	0.2
ALT	8/4	248	13.05	(2.35-72.43)	0.003	4.16	(0.40-42.88)	0.2

\*Cases without telomere length are not included.

**Table S5. Association of telomere lengths with overall survival in all patients with MPNST**

	Death/Censor	Person-time (months)	Univariate			Multivariate		
			HR	(95% CI)	P-value	HR	(95% CI)	P-value
<b>Age</b>	24/25	1779	1.01	(0.99-1.03)	0.4	1.01	(0.99-1.03)	0.4
<b>Grade</b>								
Low	1/3	168	1.00	(Ref)	-	1.00	(Ref)	-
High	23/22	1612	2.86	(0.38-21.40)	0.3	3.48	(0.42-28.97)	0.2
<b>Telomere lengths</b>								
Normal	6/10	417	1.00	(Ref)	-	1.00	(Ref)	-
Short	1/13	801	0.13	(0.02-1.07)	0.06	0.09	(0.01-0.79)	0.03
ALT	17/2	561	1.95	(0.76-5.00)	0.2	1.30	(0.43-3.91)	0.6

**Table S6. Association of ALT with overall survival in all patients with MPNST.**

	Death/Censor	Person-time (months)	Univariate*			Multivariate		
			HR	(95% CI)	P-value	HR	(95% CI)	P-value
<b>Age</b>	76/51	3818	1.01	(0.99-1.02)	0.3	1.01	(0.99-1.02)	0.3
<b>Grade</b>								
Low	3/10	688	1.00	(Ref)	-	1.00	(Ref)	-
High	73/41	3130	5.47	(1.71-17.46)	0.004	5.32	(1.66-17.07)	0.005
<b>ALT status</b>								
Negative	59/49	3256	1.00	(Ref)	-	1.00	(Ref)	-
Positive	17/2	561	1.51	(0.87-2.60)	0.1	1.23	(0.70-2.15)	0.5

\*Cases without ALT status are not included.