

## Supplemental Data

### **Table S1. Patients, samples, immunohistochemistry, qPCR and Oncomap results**

Table reports values obtained from each patient sample. Patients with multiple tumor specimens are highlighted in yellow or green. UPI = Unique patient identifier. Age at presentation. Co-Morbidity includes immunocompromised disease state and therapy. Stage of MCC at initial presentation. Specimens correspond to primary, lymph node (LN) or metastatic (Met) lesion at presentation or recurrence. Immunohistochemistry results for CK20, chromogranin, synaptophysin, AE1/AE3, TTF-1 and CK7 were extracted from clinical pathology reports of each specimen. Immunohistochemistry with Ab3 antibody used at final concentration of 0.6 or 2.4 µg/ml and CM2B4 antibody at 2.0 µg/ml. Values for Ab3 and CM2B4 reflect IHC staining intensity (absent 0, weak 1+, moderate 2+, strong 3+). Values for PCR primer and probe sets LT2, LT3, Set6, Set7 and Set9 normalized to TPO copy number relative to values from MKL-2 cell line. Oncomap; mutation detected by genotyping. Pos = positive, neg = negative, NT = not tested, ND = none detected.

Table S1. Patients, samples, immunohistochemistry, qPCR and Oncomap results

UPI	Age	Sex	Co-morbidity	Stage	Specimen	CK20	Chromo granin	Synapto physin	AE1/AE3	TTF-1	CK7	Ab3 (0.6)	Ab3 (2.4)	CM2B4	LT2	LT3	Set6	Set7	Set9	Mutation
1	75	M		IIIA	Primary	pos	pos	pos		neg		3		3	1.899	6.266	2.732	0.6667	4.213	ND
2	76	F		IIIB	LN	pos	pos	neg	pos	neg	neg	3		3	2.594	2.51	NT	2.523	NT	ND
3	67	F		IIIA	Primary	pos	pos		pos	neg	neg	3		3	7.917	9.334	12.55	0.0485	9.448	ND
4	80	F		IIIA	Primary	pos	pos		pos	neg	neg	3		2	3.668	3.21	NT	6.148	NT	ND
5	81	M		IIIA	Primary	pos	pos		pos	neg	neg	3		NT	2.181	2.01	5.579	1.149	1.185	ND
6	77	F		IV	Primary	pos	pos	pos	pos	pos		3		3	3.945	4.619	NT	2.761	NT	ND
7	79	F		1A	Primary	pos	pos					3		1	0.3573	3.266	8.112	3.605	1.899	ND
8	54	M		II	Primary	pos	neg	neg	pos			NT		NT	6.498	16.88	NT	6.658	NT	ND
9	50	M	Rheumatoid arthritis; prednisone, methotrexate	IIIA	LN	pos	pos		pos			2		2	0.9659	1.286	NT	0.1975	NT	ND
9					Primary	pos	pos					3		2	3.095	3.636	NT	3.877	NT	ND
10	74	F		IIIA	Primary	pos	pos					3		3	2.071	3.1	NT	3.249	NT	ND
11	80	F	CLL	IIIA	Primary	pos	pos	pos	pos	neg	neg	1	1	0	0.0025	2073	0.0112	2187	3203	ND
12	56	M		IIIA	Primary	pos	pos	neg	pos	neg	neg	2		2	3.434	2.155	6.704	0.072	1.244	ND
13	58	F		IIIA	Primary	pos	pos	neg	pos	neg	neg	3		2	2.908	2.118	NT	3.643	NT	ND
14	78	F		IIIB	LN	pos	pos		pos	neg		1	1	1	0.0042	0.1342	0.0788	0.0052	0.0213	ND
15	52	F		IA	Primary	pos	pos	pos	pos	neg	pos	0	0	0	0.0033	0.6145	0.1107	0.004	0.0691	TP53 R248Q
16	85	M		IIIA	Primary	pos	pos				neg	3		3	3.352	2.293	NT	3.249	NT	ND
17	50	F	Systemic lupus erythematosus; prednisone	IIIB	Primary	pos						3	3	3	5.046	8.56	NT	5.856	NT	ND
18	79	M		IIIB	LN	pos	pos	pos			neg	3		3	4.272	2.14	NT	3.877	NT	TP53 R273C
19	79	M		IIIA	Primary	pos	pos				neg	3		3	13.78	30.54	NT	18.06	NT	ND
19					Recurrence							3		3	19.23	36.69	NT	9.448	NT	ND
20	51	F		IV	Met	pos	neg	pos	pos	neg	neg	3		2	7.413	13.06	NT	8.427	NT	ND
21	71	M		IIIB	Recurrence	pos	pos	neg	pos	pos		3	3	1	1.803	1.935	3.01	0.2502	1.613	ND
22	74	M	CML	IIIA	Primary	pos	pos	pos	neg		neg	3		2	1.67	1.55	1.51	0.4398	0.7047	ND
23	86	F	Lung cancer; carboplatin, taxol	IIIB	Recurrence	pos	pos	pos	pos	neg	neg	3	3	3	4.199	4.967	NT	4.627	NT	ND
24	83	M		IIIA	LN	pos			pos			3		2	1.516	2.192	NT	2.035	NT	ND
25	72	M		IA	Primary	pos				neg		2		1	3.837	0.8751	9.481	2.78	1.759	ND
26	53	M	Kidney and pancreas transplant; prednisone, tacrolimus, mycophenolate mofetil	IIIA	Met #1	pos	pos			neg	neg	3		3	7.413	6.052	1.057	3.519	3.837	ND
26					Met #2							3		3	5.657	10.11	NT	5.223	NT	ND
27	74	M		IIIA	Recurrence	pos				neg		1		1	0.0133	0.0835	0.0439	0.0459	0.0183	ND
28	49	F	Psoriatic arthritis; methotrexate	IIIA	Primary	pos	pos			neg	neg	2		2	2.289	2.804	NT	3.446	NT	ND
29	80	M		IIIA	Primary	pos			pos			2		2	160.3	141.8	NT	159.2	NT	ND
30	81	M		IIIA	Primary	pos	pos		pos			3	3	0	0.0903	0.4641	NT	0.0636	NT	ND
30					LN							2		0	0.01	0.0176	0.0226	0.0047	0.0199	ND
31	57	M		IIIB	LN	NT						3		3	4.17	15.7	19.36	8.97	1.79	ND
32	83	F		IB	Primary	pos						3		2	1.636	1.902	2.648	1.338	1.31	ND
33	55	M		IIIA	Recurrence	pos	pos		pos	neg	neg	3	3	3	6	7.148	NT	6.148	NT	ND
34	85	M	Rheumatoid arthritis; methotrexate, prednisone	IIIA	Primary	pos			neg		pos	3		3	4.332	11.18	NT	13.27	NT	ND
35	51	M		IA	Recurrence	pos	neg		pos	neg		3		3	3.042	8.182	NT	5.333	NT	ND
36	75	F		IIIB	LN	pos	pos	pos	pos	neg	neg	3		3	6.063	6.739	NT	17.27	NT	ND
37	76	M		IIIA	Primary	pos	pos					1	2	0	0.0006	0.0084	0.2553	0.0061	0.1512	ATM P604S
38	80	F		IIIA	Primary	pos			pos			0	2	1	487.8	646.9	NT	537.5	NT	ND
39	81	M		IIIA	Primary	pos	pos			neg	neg	3		3	0.9044	1.412	3.543	1.235	1.173	ND
40	70	M	CLL; fludarabine	IIIB	Primary	pos			pos	neg	neg	2		1	2.585	11.18	10.37	0.669	0.8615	ND
41	65	F		IB	Primary #1	pos			neg	neg	neg	3		NT	1.214	1.679	11.24	1.495	1.834	ND
41					Primary #2	pos	pos		pos	neg	neg	3		2	1.292	1.738	1.526	0.6783	1.613	ND
42	68	F		IA	Primary	pos	pos	neg	pos	neg	neg	NT	0	0	0.0552	0.3718	0.0915	0.6998	0.2579	TP53 R248Q
43	45	M		IIIB	LN	pos	pos	pos		neg	neg	3		2	7.037	7.661	0.3025	0.0434	5.011	ND
44	77	M		IIIB	LN	pos	pos			neg	neg	3		3	0.801	0.0288	5.029	0.001	1.735	ND
45	54	F		IIA	Primary	pos	pos		pos			0	1	0	0.6854	1.0811	11.71	0.6783	3.042	ND
46	78	F		IIIB	Primary	pos	pos					0	1	0	0.0035	0.0377	0.1349	0.0176	0.0129	ND
47	60	M	Kidney transplant; methylprednisolone, cyclosporine, sirolimus	IIIB	LN	pos	pos	pos	pos			1	2	0	0.0013	0.0806	0.0005	0.0069	0.0134	ND
48	65	M	Cardiac transplant; cyclosporine, sirolimus, prednisone, azathioprine	IA	Primary	pos	pos	pos			neg	3		2	5.696	3.7	NT	6.658	NT	ND
48					Recurrence							3	3	2	3.506	4.063	1.057	3.618	3.837	ND
49	82	M	Hodgkin lymphoma, diagnosed in 1957, MOPP chemotherapy	IIIB	Primary	pos	pos	pos		neg		2		0	0.0078	0.0144	0.0291	0.0383	0.0077	ND
50	84	F		IIIB	Primary	pos	neg			neg		3		2	30.27	30.96	NT	28.44	NT	ND
51	50	M		IIIA	Primary	pos				neg	neg	3		3	11.92	10.04	NT	14.72	NT	ND
52	74	M		IA	Primary #1	pos	pos	pos	pos	neg	neg	3		2	3.593	4.163	NT	3.618	NT	ND
52					Primary #2							3		3	3.306	3.323	NT	2.898	NT	ND
52					Recurrence #1							1	3	1	1.253	4.603	3.01	4.408	4.332	ND
52					Recurrence #2							3		3	2.204	9.399	NT	4.377	NT	ND
52					Recurrence #3							3		3	1.459	2.985	NT	2.181	NT	ND
53	60	F		IIIA	Primary	pos	pos	pos	pos	neg		2		0	0.0563	2.024	0.2365	0.1513	0.3923	ND
53					Met #1							2		0	0.0201	0.0068	0.073	0.009	0.0227	ND
53					Met #2							2		0	0.0333	4.354	0.1158	0.0482	4.595	ND
53					Recurrence	pos						1	2	0	0.0049	0.0702	0.1713	0.0216	0.0275	ND
54	78	F		IIA	Primary	pos	pos		pos			3		3	16.45	17.24	NT	14.723	NT	ND
54					LN							3		3	28.15	24.38	NT	23.59	NT	ND
55	80	M		IIIB	Recurrence	pos	pos					3		2	3.16	5.474	NT	4.332	NT	ND
56	90	F		IIIA	Primary	pos						3		3	15.08	20.15	NT	28.84	NT	ND
57	59	M		IA	Primary	pos	neg	pos				0	1	0	0.0102	0.0543	0.0546	0.0069	0.0272	ND
58	73	M	Low grade B-cell lymphoma; prednisone	IIIB	Primary	pos	pos		pos	neg	neg	3		3	3.732	4.798	NT	3.972	NT	ND
59	54	M		IIIB	Primary	pos	pos	pos	pos	neg	neg	3		NT	4.272	4.667	14.77	0.0479	11.67	ND
59					LN	pos				neg		NT		NT	5.676	6.577	9.095	0.0125	5.483	ND
60	71	M	Autoimmune liver disease; methotrexate, prednisone	IIIA	Recurrence	pos				neg		1	2	1	0.0059	0.0119	0.0334	0.0082	0.017	ND

**Table S2. Immunohistochemistry of gastrointestinal neuroendocrine and small cell lung carcinoma**

Table reports immunohistochemistry from 10 gastrointestinal neurocrine (A-J) and 8 small cell lung (K-R) carcinoma specimens. Specimens include primary (P), metastatic (M) or lymph node (LN) lesions. Immunohistochemistry for Ab3 and CMB4 were performed as indicated. Results for chromogranin, synaptophysin, CK20, positive epithelial marker, other positive marker and other negative marker were extracted from clinical pathology reports. Positive staining (Pos); Negative staining (neg); NT = not tested.

**Table S2. Immunohistochemistry of gastrointestinal neuroendocrine and small cell lung carcinoma**

Case	Site	Primary Metastatic Lymph Node	Ab3	CM2B4	Chromogranin	Synaptophysin	CK20	Positive Epithelial Marker	Other Positive Marker	Other Negative Marker
A	Rectum	P	neg	NT	pos	pos	pos	CK7	p63	CDX2
B	Liver	M	neg	NT	pos	pos	neg	CK7		CDX2
C	Anus	P	neg	NT	NT	pos	NT	AE1/AE3	Ki-67 (>90%)	CD45
D	Ampulla of Vater	P	neg	NT	pos	pos	pos		CDX2, Ki-67 (>90%)	
E	Esophagus	P	neg	NT	neg	pos	NT		CDX2, SOX2	TTF-1, p63
F	GE Junction	P	neg	NT	pos	pos	NT	EMA		TTF-1, CDX2
G	Anus	P	neg	NT	pos	pos	NT		SOX2	TTF-1, CDX2, p63
H	Right Colon	P	neg	NT	pos	pos	NT		CDX2, SOX2	
I	Pancreas	P	neg	NT	pos	pos	neg	AE1/AE3	Ki-67 (>20%)	CDX2
J	Rectum	P	neg	NT	NT	NT	NT		Ki-67 (35%)	
K	Small cell	LN	neg	neg	pos	neg	NT		TTF-1	
L	Small cell	LN	neg	neg	neg	pos	pos			CK7, TTF-1
M	Small cell	P	neg	neg	pos	pos	neg		TTF-1	CK7
N	Small cell	LN	neg	neg	neg	pos	NT			TTF-1
O	Small cell	LN	neg	neg	neg	neg	NT		TTF-1	
P	Small cell	LN	neg	neg	neg	neg	NT		TTF-1	p63
Q	Small cell	LN	neg	neg	NT	NT	NT			
R	Small cell	NA	neg	neg	NA	NA	NA			