Supplemental Table 1. Clinical and histologic characteristics of cutaneous melanocytic nevi, primary melanomas, and melanoma metastases that were evaluated using immunofluorescence and their relationship to ITK protein levels

	n (%)			Mean ITK Level in S100 Mask (AQUA Score) +/- SEM					
	Nevi	Primary Melanomas	Melanoma Metasases[a]	Nevi		Primary Melanomas		Melanoma Metasases[a]	
Characteristic	**N = 30**	**N = 20**	**N = 70**	**N = 30**	***P* value[b]**	**N = 20**	***P* value[b]**	**N = 70**	***P* value[b]**
All specimens in each category				79.6 +/- 12.6		215 +/- 23.8		696 +/- 30	
Sex									
Male	12 (40)	11 (45)	46 (66)	83.3 +/- 23.1	0.88	244 +/- 30.7	0.13	695 +/- 35.3	0.95
Female	18 (60)	9 (55)	24 (34)	77.2 +/- 14.9		179 +/- 35.5		698 +/- 56.8	
Age at diagnosis of mole or primary melanoma									
≤ 40 yrs	25 (83)	5 (25)	16 (23)	72.4 +/- 12.9	0.07	174 +/- 45.7	0.35	698 +/- 68.1	0.89
> 40 yrs	5 (17)	15 (75)	54 (77)	116 +/- 38.8		229 +/- 27.8		695 +/- 33.7	
Anatomic site of mole or primary melanoma									
Head/neck	10 (33)	5 (25)	25 (36)	101 +/- 25.4	0.33	201 +/- 39.2	0.96	685 +/- 53.1	0.41
Trunk	15 (50)	6 (30)	23 (33)	63.4 +/- 11.8		216 +/- 47.8		711 +/- 45.2	
Extremities	5 (17)	9 (45)	18 (26)	86.2 +/- 46.3		222 +/- 39.9		644 +/- 57.1	
Metatstasis with unknown primary	na	na	4 (6)	na		na		917 +/- 181	
Melanoma histologic subtype of primary melanoma									
Superficial Spreading	na	10 (50)	19 (27)	na		(see below)[c]		694 +/- 61	0.53
Nodular	na	1 (5)	9 (13)	na		(see below)[c]		636 +/- 68.1	
Lentigo maligna	na	3 (15)	5 (7)	na		(see below)[c]		723 +/- 73.2	
Acral lentiginous/unclassified/other	na	6 (30)	25 (36)	na		(see below)[c]		666 +/- 50	
Subtype of primary not available	na	na	12 (17)	na		na		796 +/- 86	
Melanoma histologic subtype of primary melanoma[c]									
Superficial spreading melanoma	na	10 (50)	nd	na		221 +/- 31.4	0.68	nd	
Nodular, lentigo maligna, acral lentiginous, other subtypes	na	10 (50)	nd	na		209 +/- 37.4		nd	
Melanocytic nevus type									
Intradermal	9 (30)	na	na	68.3 +/- 16	0.96	na		na	
Compound	12 (40)	na	na	93.2 +/- 25.5		na		na	
Compound with congenital pattern	9 (30)	na	na	72.9 +/- 20.6		na		na	
Melanoma BRAFV600E status[d]									
Wildtype (BRAFV600E negative)	nd	14 (70)	47 (67)	nd		224 +/- 31.8	0.55	702 +/- 35	0.67
BRAFV600E positive	nd	6 (30)	23 (33)	nd		194 +/- 30.3		684 +/- 58.3	
Breslow thickness of primary melanoma, mm									
0.01 to 2.00	na	6 (30)	25 (36)	na		173 +/- 53.1	0.24	639 +/- 47	0.18
>2.00	na	14 (70)	35 (50)	na		233 +/- 25.2		706 +/- 39.6	
Breslow depth of primary not available	na	na	10 (14)	na		na		804 +/- 104	
Ulceration of primary melanoma									
Absent	na	12 (60)	23 (33)	na		180 +/- 26.9	0.08	661 +/- 53.6	0.70
Present	na	8 (40)	22 (31)	na		267 +/- 38.6		720 +/- 50.6	
Ulceration status of primary not available	na	na	25 (30)	na		na		707 +/- 53	
Mitoses of primary melanoma									
Absent	na	2 (10)	6 (9)	na		223 +/- 168	1.00	622 +/- 69.9	0.38
Present	na	18 (90)	38 (54)	na		214 +/- 22.8		675 +/- 42.8	
Mitotic rate of primary not available	na	na	26 (37)	na		na		743 +/- 48.7	
Tumor infiltrating lymphocyte grade of primary melanoma									
Absent	na	9 (45)	nd	na		223 +/- 34.6	0.88	nd	
Nonbrisk or brisk	na	11 (55)	nd	na		208 +/- 34.1		nd	
Pigment of primary melanoma									
Absent	na	4 (20)	nd	na		194 +/- 31.4	0.89	nd	
Present	na	16 (80)	nd	na		220 +/- 29		nd	
Solar Elastosis of primary melanoma									
Absent	na	10 (53)	nd	na		241 +/- 39	0.50	nd	
Mild to moderate or severe	na	9 (47)	nd	na		197 +/- 28.9		nd	
Metastatic tissue source									
Lymph node	na	na	31 (44)	na		na		710 +/- 47.1	0.91
Skin	na	na	21 (30)	na		na		711 +/- 45.6	
Lung	na	na	6 (9)	na		na		612 +/- 155	
Gastrointestinal, soft tissue	na	na	12 (17)	na		na		675 +/- 70.1	

Abbreviations: AQUA, automated quantitative analysis na, not applicable; nd, not done; SEM, standard error of the mean.

[a]Age, site, histologic subtype, Breslow thickness, ulceration and mitoses are for the associated primary melanoma from the same patient. However, immunohistochemical stains for BRAF VE1, ITK, pAKT, pERK, PD-L1, and PTEN were performed on the melanoma metastasis

[b]*P* values are from Mann-Whitney or Kruskal-Wallis tests.

[c]For primary melanomas, superficial spreading was compared to all other melanoma subtypes due to small numbers in the other subgroups.

[d]For the primary melanomas, BRAFV600E was determined by sequencing. For the metastatic melanomas, BRAFV600E status was determining through immunohistochemistry with the BRAF VE1 antibody. Details are in the methods.