

## Important Immunohistochemical stains in dermatology

Sheila M. Valentin Nogueras, M.D.

Neoplasm/disorder	Stain	Comment
<i>Atypical fibroxanthoma</i>	<b>Vimentin+</b> <b>CD99+</b> <b>CD10+</b> <b>Pro-collagen-1+</b> <b>LN-2 (CD74)-</b>	CD68+ (57-62%) α1 anti-trypsin and α1 anti-chymotrypsin + in >50%
<i>Malignant fibrous histiocytoma</i>	<b>LN-2 (CD74)+</b>	Weak staining for CD99
<i>Basal cell carcinoma</i>	<b>bcl-2+ (diffuse staining)</b> <b>peanut agglutinin+ (band-like peritumorous reaction)</b> <b>Ber-Ep4+</b> <b>CD34-</b>	Clinically aggressive BCCs have low labeling with <i>bcl-2</i>
<i>Trichoepithelioma</i>	<b>bcl-2+ (only in basal layer)</b> <b>peanut agglutinin-</b> <b>Ber-Ep4+ (~75% of desmoplastic TE)</b> <b>CD34+ (peritumoral fibroblasts)</b>	Desmoplastic trichoepitheliomas are CK20+ due to the presence of Merkel cells (uncommon in BCC)
<i>Dermatofibroma</i>	<b>CD34-</b> <b>FXIIIa+</b> <b>Stromelysin-3+</b>	
<i>Dermatofibrosarcoma protuberans</i>	<b>CD34+</b> <b>FXIIIa-</b> <b>Stromelysin-3-</b>	
<i>Epithelioid sarcoma</i>	<b>Cytokeratin (CK8, CK19)+</b> <b>EMA+</b> <b>Vimentin+</b>	~50% are CD34+
<i>Granular cell tumor</i>	<b>S100+</b> <b>NSE+</b> <b>Granules are:</b> <b>PAS+</b> <b>PTAH+</b>	Myelin basic protein staining variable
<i>Hemangioma of infancy</i>	<b>GLUT-1+</b>	
<i>RICH</i> <i>NICH</i> <i>Vascular malformations (capillary, lymphatic, venous, and arteriovenous)</i>	<b>GLUT-1-</b>	
<i>Infantile digital fibromatosis</i>	<b>Eosinophilic cytoplasmic inclusion bodies are:</b> <b>PTAH+</b> <b>Masson trichrome+</b> <b>actin+</b> <b>PAS-</b>	
<i>Kaposi's sarcoma</i>	<b>HHV-8+</b>	Variable staining for CD31, CD34, <i>Ulex Europaeus</i> , and factor VIII-related antigen
<i>Leiomyosarcoma</i>	<b>Vimentin+</b> <b>Desmin+</b> <b>Smooth muscle actin+</b>	
<i>Mastocytosis</i>	<b>Giemsa+</b> <b>Toullidine blue+</b> <b>Leder (chloracetate esterase)+</b> <b>c-kit (CD117)+</b>	CD25+ on cutaneous mast cells from adult patients with UP is predictive of systemic mastocytosis
<i>Melanoma</i>	<b>S100+</b> <b>HMB-45+</b> <b>MART-1+</b>	Desmoplastic melanoma: S100+ p75 Neurothrophin receptor (p75 NPR) + HMB-45- MART-1-



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Merkel cell carcinoma	<b>CK20+ : paranuclear dot staining</b> <b>CK7-</b> <b>Thyroid transcription factor (TTF-1) -</b>	neuron-specific enolase (NSE), EMA, synaptophysin, and chromogranin +  CD44+ may indicate metastatic potential
Metastatic small cell lung carcinoma	<b>CK20-</b> <b>CK7+</b> <b>TTF-1+</b>	
Microcystic adnexal carcinoma	<b>CEA+</b> <b>EMA+</b> <b>Ber-Ep4-</b>	Morpheaform BCC and desmoplastic trichoepithelioma are Ber-Ep4+
Mycosis fungoides	<b>CD2, CD3, CD4, and CD45RO+</b> <b>CD8-</b> <b>CD30-</b>	Loss of CD7 (non-specific)
Mammary Paget's disease	<b>CK7, CEA, EMA, low molecular weight cytokeratins (Cam 5.2), PAS, Alcian blue, and mucicarmine +</b>	
Primary extra-mammary Paget's disease	<b>CK7 +/CK20-/GCDFP-15+</b>	Both are CEA, EMA, low molecular weight cytokeratins, PAS, Alcian blue, and mucicarmine +
Secondary extra-mammary Paget's disease (Associated with an underlying visceral CA)	<b>CK7 +/CK20 +/GCDFP-15-</b>	
Spitz nevus	<b>S100A6+</b> <b>p16+</b>	vs Melanoma: weak staining with p16 and S100A6

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