

Meet the Marker: Pan-Cytokeratin AE1/AE3

Meet the Marker: Pan-Cytokeratin AE1/AE3

Pan cytokeratin (AE1/AE3) is a cocktail of two different monoclonal antibodies, AE1 and AE3 specific for antigens found in cytokeratins which are intermediate filament proteins present in epithelial cells.⁴ Monoclonal antibody AE1 detects the acidic subtypes of cytokeratins, while monoclonal antibody AE3 recognizes the basic subtypes of cytokeratins.⁴ As a mixture of the two, Pan cytokeratin (AE1/AE3) can detect a wide range of high and low molecular weight cytokeratins.^{3,4}

In clinical diagnostics, Pan cytokeratin (AE1/AE3) is a valuable tool in the examination of tissue samples, particularly in cancer diagnosis, since it aids in confirming the epithelial origin of tumors.^{1,2} Positive staining, indicating the presence of cytokeratins in tumor cells, helps differentiate between carcinomas (cancer derived from epithelial cells) and other types of cancers such as sarcomas (cancer derived from mesenchymal cells) or non-cancerous growths.²

Moreover, it aids in subtyping tumors and understanding their behavior, contributing to the selection of appropriate treatments.^{2,4} Pan cytokeratin (AE1/AE3)'s ability to help identify the origin of a tumor may be particularly crucial in metastatic cases.³

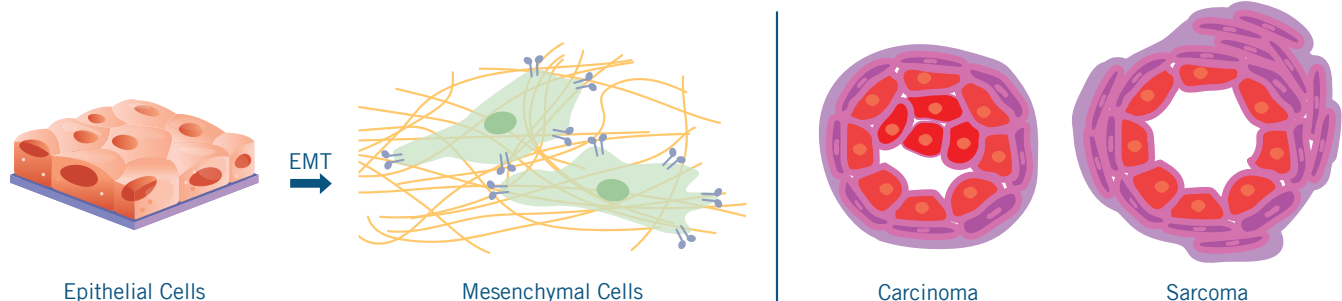
However, there are still some limitations to the application of Pan cytokeratin (AE1/AE3) in IHC. Since epithelial tumors come in so many different varieties, some Pan cytokeratin (AE1/AE3) epithelial tumors have been identified. Conversely, Pan cytokeratin (AE1/AE3) positive mesenchymal tumors have also been reported.³

The versatility of this antibody cocktail makes it a cornerstone in pathology, allowing for a more comprehensive assessment of various tumors.

Pan-Cytokeratin Stain & Illustrations



Colon cancer stained with Pan Cytokeratin [AE1/AE3] antibody



To learn more about the markers listed above, please visit our website at [biocare.net](https://www.biocare.net) or call 1-800-799-9499, option #3

1. Howitt, B. E., Quick, C. M., Nucci, M. R., & Crum, C. P. (2018). Adenocarcinoma, Carcinosarcoma, and Other Epithelial Tumors of the Endometrium. In C. P. Crum, M. R. Nucci, B. E. Howitt, S. R. Granter, M. M. Parast, & T. K. Boyd (Eds.), *Diagnostic Gynecologic and Obstetric Pathology* (Third Edition) (pp. 582-651). Elsevier. ISBN 9780323447324. <https://doi.org/10.1016/B978-0-323-44732-4.00019-4>.
2. Selves, J., Long-Mira, E., Mathieu, M. C., Rochaix, P., & Ilié, M. (2018). Immunohistochemistry for Diagnosis of Metastatic Carcinomas of Unknown Primary Site. *Cancers*, 10(4), 108. <https://doi.org/10.3390/cancers10040108>
3. Menz, A., Gorbokov, N., Viehweger, F., Lennartz, M., Hube-Magg, C., Hornsteiner, L., Kluth, M., Völkel, C., Luebke, A. M., Fraune, C., Uhlig, R., Minner, S., Dum, D., Höflmayer, D., Sauter, G., Simon, R., Burandt, E., Clauditz, T. S., Lebok, P., Jacobsen, F., ... Bernreuther, C. (2023). Pan-keratin Immunostaining in Human Tumors: A Tissue Microarray Study of 15,940 Tumors. *International journal of surgical pathology*, 31(6), 927-938. <https://doi.org/10.1177/10668969221117243>
4. Sinha, G. M., & Hegde, V. (2023). Detection of micro-metastasis using cytokeratins (AE1/AE3) in haematoxylin & eosin-stained NO lymph nodes of oral squamous cell carcinoma. *The Indian journal of medical research*, 157(4), 316-321. https://doi.org/10.4103/ijmr.IJMR_489_20