WHITEPAPER

Meet the Marker: Glycophorin A

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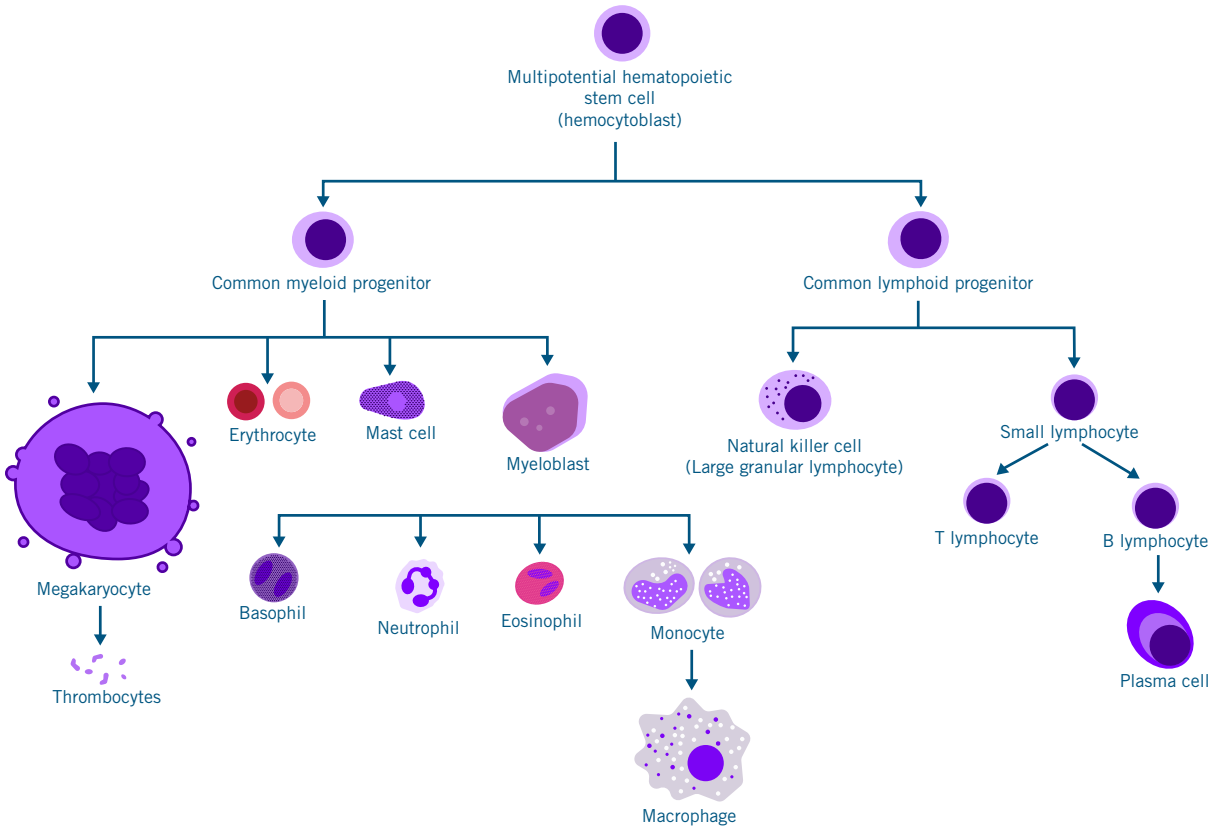
Leukemia is a broad term for a variety of cancer subtypes involving blood cells. These cancers have the potential to be devastating if left untreated. To provide the best treatment possible, it is vital to narrow down which specific leukemia subtype the patient is suffering from as quickly as possible. The IHC marker Glycophorin A may help with subtype differentiation.

Glycophorin A (also known as CD235a or GYPA) is a major sialoglycoprotein, a combination of sialic acid and glycoprotein, found in red blood cell membranes. The membranes of red blood cells, also known as erythrocytes, are uniquely designed to be flexible and extra resistant to shearing since they are repeatedly squeezed through narrow blood vessels in the body.[5] It is believed that glycophorins help tether the cells' cytoskeleton to the lipid bilayer at the actin junctional complexes.[5] Glycophorin A is a specific and early marker for normal erythroid lineage.[2]

However, erythrocytes are just one of many types of types of blood cells to be differentiated from a common progenitor cell: the hematopoietic stem cell. Hematopoietic stem cells in the bone marrow are the origin of all blood cells, including both red and white blood cells.

Hematopoietic stem cells first differentiate into myeloid progenitor cells and lymphoid progenitor cells. The lymphoid progenitor cells will give rise to immune cells such as natural killer cells, T cells, and B cells.[3] The myeloid progenitor cells will differentiate into mast cells, erythrocytes, megakaryocytes, and granulocytes such as neutrophils, eosinophils, basophils, and macrophages.[3] Leukemia may develop from any one of these blood cell lineages if any part of this process goes haywire.

Glycophorin A is expressed in early erythroid precursors, but not lymphoid or granulocytic precursors.[1] Since Glycophorin A is specific to erythrocyte lineages, it can assist in differentiating acute erythroid leukemia from other leukemia subtypes.[1]



If you are interested in learning more about Glycophorin A's potential for your lab, please visit us at biocare.net or call 1-800-799-9499.

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3. Chen, M. J., Li, Y., De Obaldia, M. E., Yang, Q., Yzaguirre, A. D., Yamada-Inagawa, T., Vink, C. S., Bhandoola, A., Dzierzak, E., & Speck, N. A. (2011). Erythroid/myeloid progenitors and hematopoietic stem cells originate from distinct populations of endothelial cells. Cell stem cell, 9(6), 541–552. https://doi.org/10.1016/j.stem.2011.10.003 4. Ekblom M, Borgström G, von Willebrand, E, et al. Erythroid blast crisis in chronic myelogenous leukemia. Blood. 1983; 62(3) 591-596. 5. Li, H., & Lykotrafitis, G. (2014). Erythrocyte membrane model with explicit description of the lipid bilayer and the spectrin network. Biophysical journal, 107(3), 642–653. https://doi.org/10.1016/j.bpj.2014.06.031