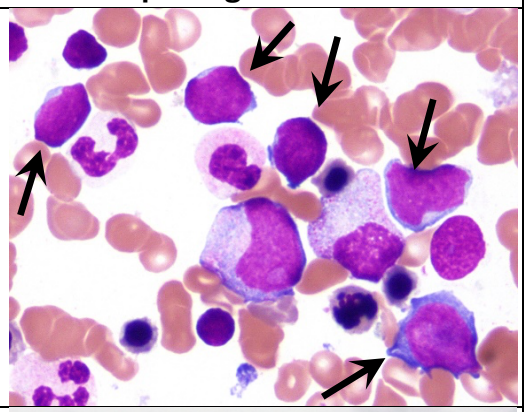
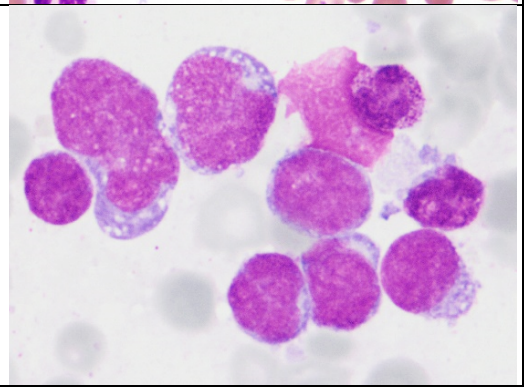
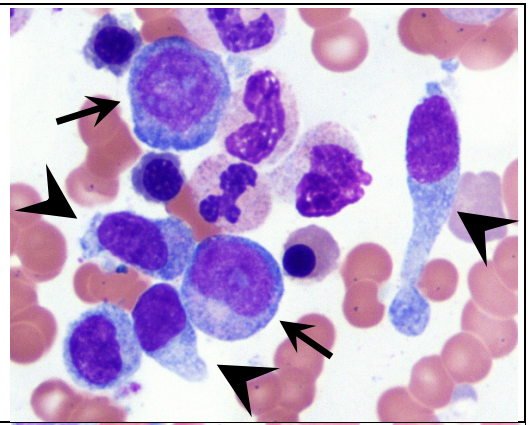
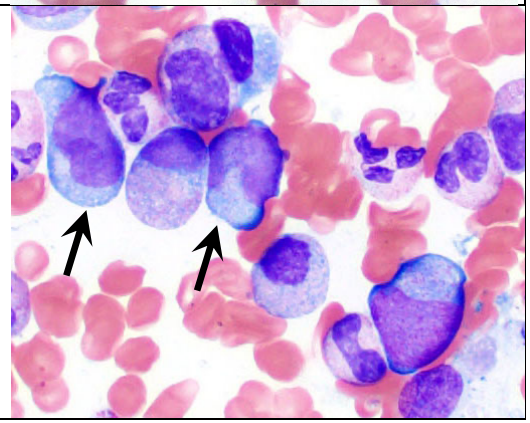
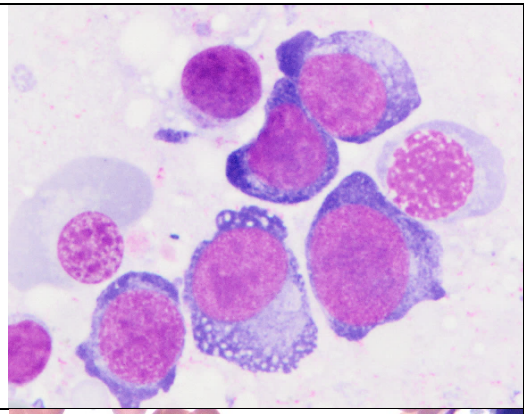
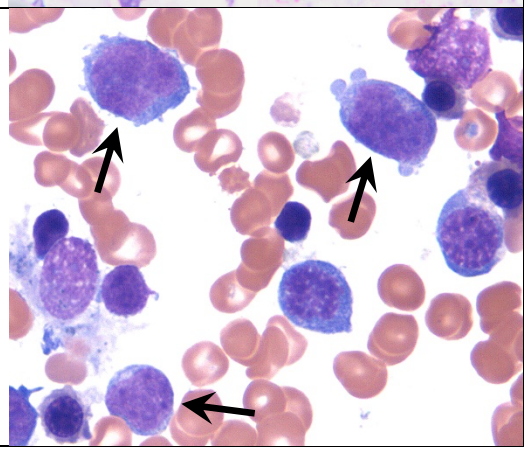
Table S1. Blast mimics in Remission Bone Marrow Post Acute Leukemia Treatment

Cell Type	Clinical Context	Morphological Characteristics	Morphologic illustration
Hematogones (Normal B-precursors)	• Infants and young patients • Patients recovering from chemotherapy • Post-stem cell transplantation (SCT)	• Small to medium-sized cells • High nuclear/cytoplasmic ratio • Round to oval nuclei • Condensed, homogeneous chromatin • Scant, basophilic cytoplasm with no granules or Auer Rods *Arrows*: hematogones	
Plasmacytoid dendritic cells	• Bone marrow recovery after chemotherapy and post SCT • Viral infection, autoimmune conditions	• Medium-sized cells • Eccentric nuclei • Moderately condensed chromatin • Abundant light basophilic cytoplasm • Cytoplasmic microvacuoles in a pearl necklace pattern and pseudopodia-like extensions	

Promyelocytes[1]/ myelocytes[1]	• Bone marrow recovery after treatment with G-CSF • Bone marrow recovery after chemotherapy • Infection	• Rapidly increasing cellularity usually with patchy distribution • Myeloid predominance • Promyelocytes: large, with round to oval nucleus, primary (azurophilic) granules, with paranuclear hof • Myelocytes contain mostly secondary granules, and no nucleoli *Arrows*: promyelocytes; *arrow heads*: pDCs	
Reactive/regenerating monocytes	• Bone marrow recovery after chemotherapy • Early post SCT • Recovery from severe infection •G-CSF or GM-CSF administration	• Increase in monocytes, usually with a left shift and asynchronous maturation •Slightly larger, with less condense chromatin, may contain faintly visible nucleoli, moderate to abundant blue-grey cytoplasm, scattered azurophilic granules *Arrows*: regenerating monocytes	

Proerythroblasts[1]	• Bone marrow recovery after chemotherapy and SCT •VitB12/folate deficiency, hemolysis, erythropoietin adminstration	•Large, round to oval nuclei with fine and evenly distributed chromatin, 1-3 prominent nucleoli, deeply basophilic cytoplasm • Compensatory hyperplasia of erythroid elements • Mild dysplastic features (e.g. nuclear irregularities, asynchronous maturation, or cytoplasmic vacuolization)	
Activated lymphocytes	• Viral infections • Autoimmune conditions • Drug reactions	• Heterogeneous population with variable size and appearance • Nucleus may show clefts or indentations • Abundant cytoplasm, deeply basophilic with occasional azurophilic granules *Arrows:* reactive lymphocytes	

Legend

1.Note that, in addition to regenerative atypia, these cells may exhibit dysplastic changes due to underlying myelodysplasia, making differentiation from leukemic blasts extremely challenging by cytomorphologic evaluation.

Morphologic features of leukemic blasts vary significantly by leukemia subtype. Lymphoblasts are generally small to medium in size, with immature (blastic) chromatin, visible nuleoli, and scant cytoplasm. Some lymphoblasts may be larger, with folded/irregular nuclei, or cytoplasmic vacuoles. AML myeloblasts range from small to large, nucleoli, immature chromatin, round to highly irregular, convoluted/folded nuclei, variable amounts of cytoplasm and cytoplasmic granules. Some can closely mimic normal myeloid precursors. Promonocytes differ from reactive/atypical monocytes by their immature chromatin and delicate nuclear folds.