Case 7

Presented by Dr Alan Mitchell

ST5

Barts Health NHS Trust

NHS
Barts Health
NHS Trust

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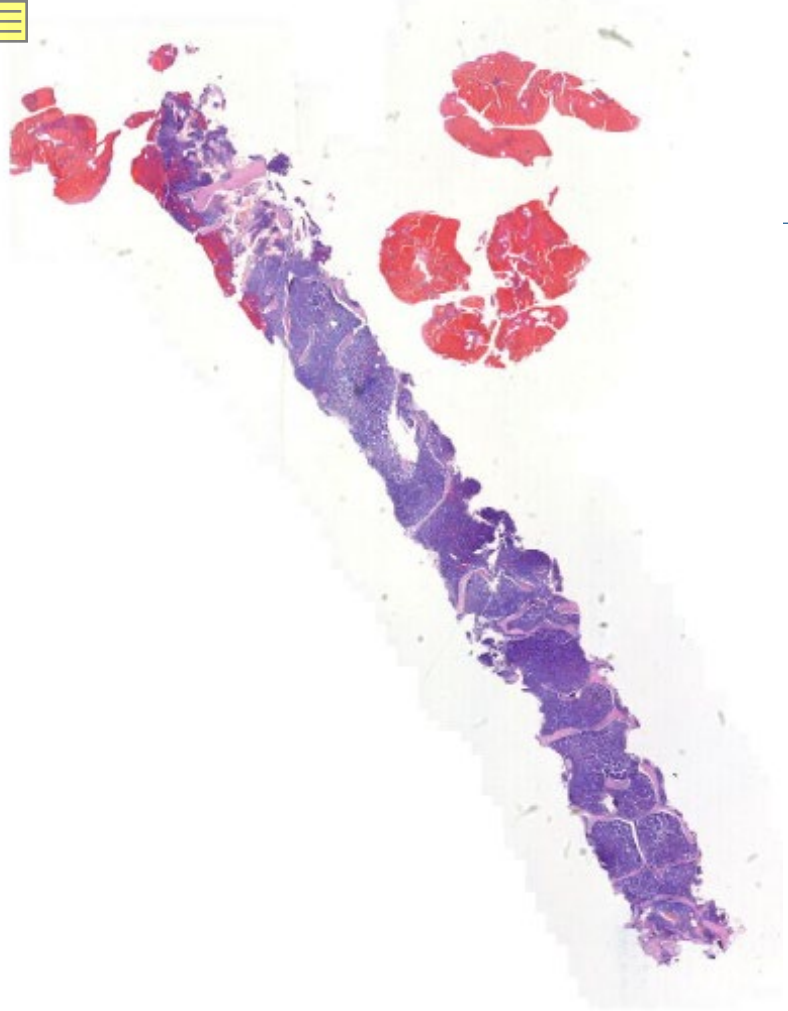
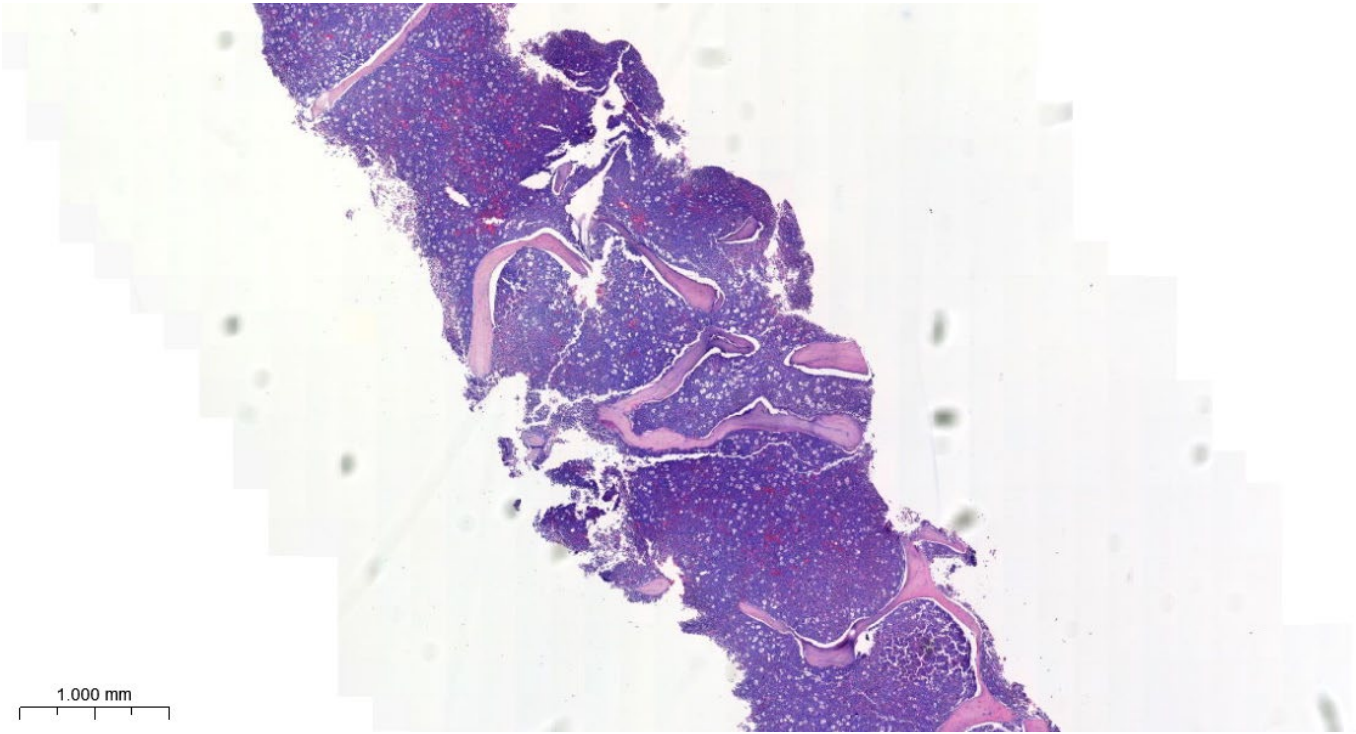
Case 7

- 73 year old male
- PMH: Obesity, nil else. No regular medication.
- Presents to his GP with fatigue and shortness of breath
- Bloods with GP: Hb 115, WBC 255.9, Neut 28.1, Plt 55
- Lab reviewed a film



Bone marrow trephine

Bone marrow trephine x 2



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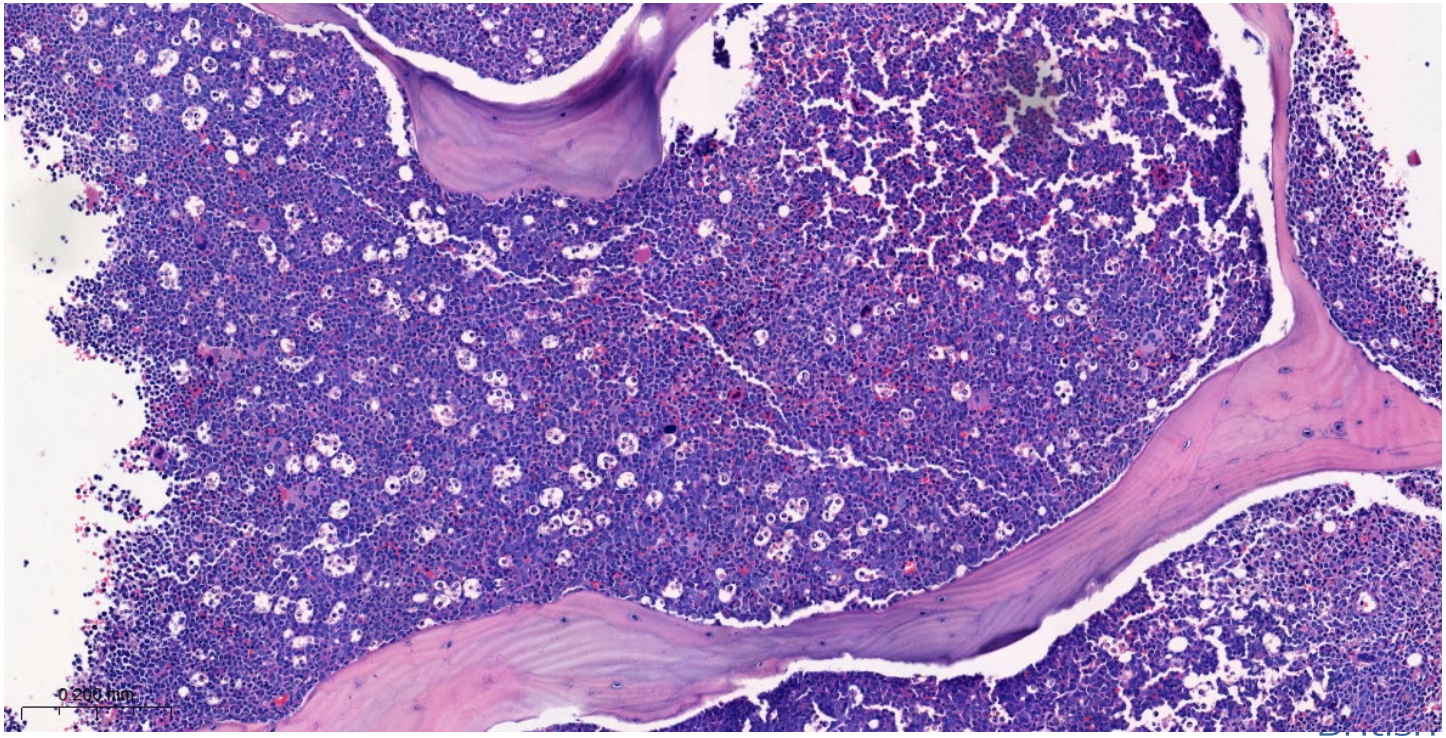
Bone marrow trephine x 10



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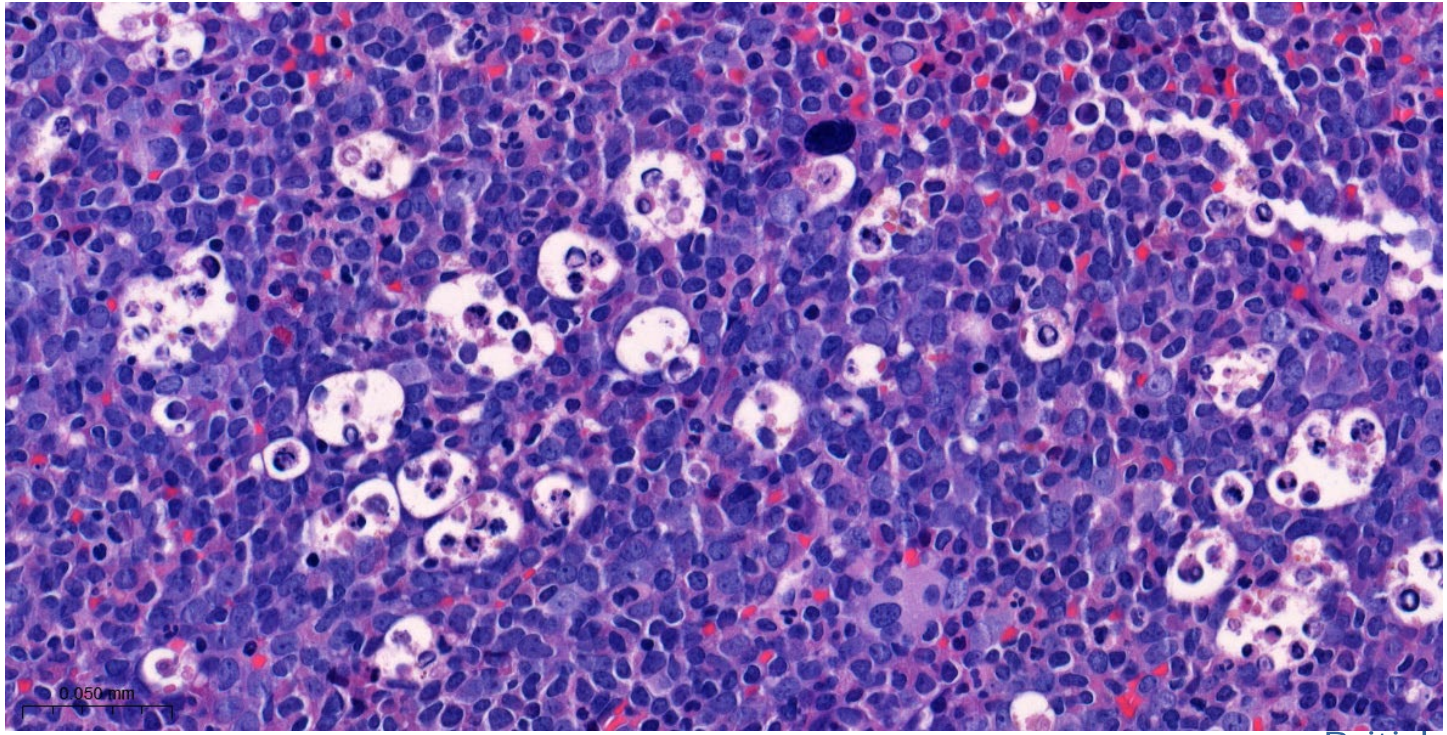
Bone marrow trephine x 40



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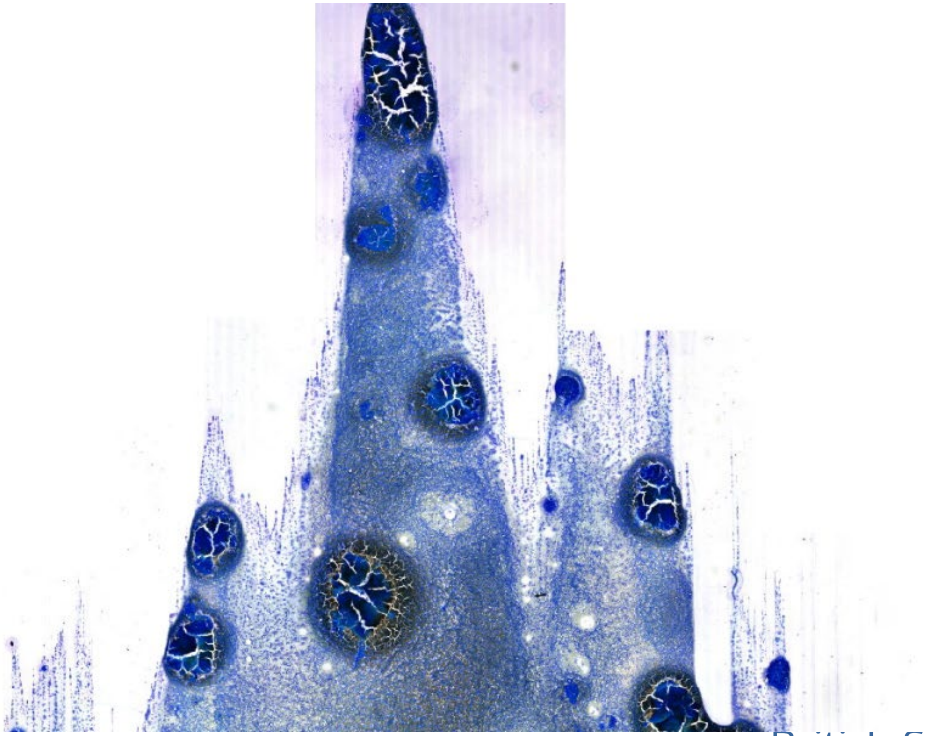
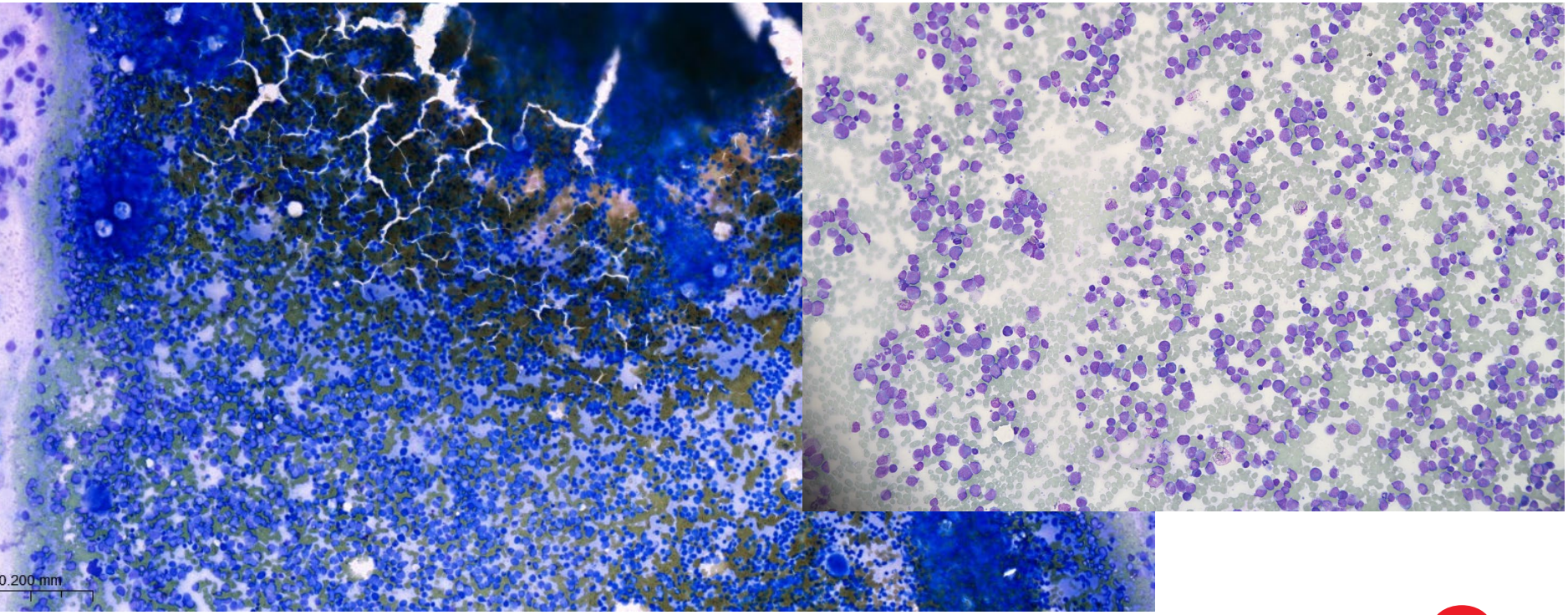
What's your suspected diagnosis?

a) Acute lymphoblastic leukaemia
b) Burkitt lymphoma
c) Hemophagocytic lymphohistiocytosis
d) Acute myeloid leukaemia, not otherwise specified
e) AML with mutated *NPM1*
f) AML with myelodysplasia-related cytogenetic abnormalities
g) APML

Bone marrow aspirate x2



Bone marrow aspirate x 10



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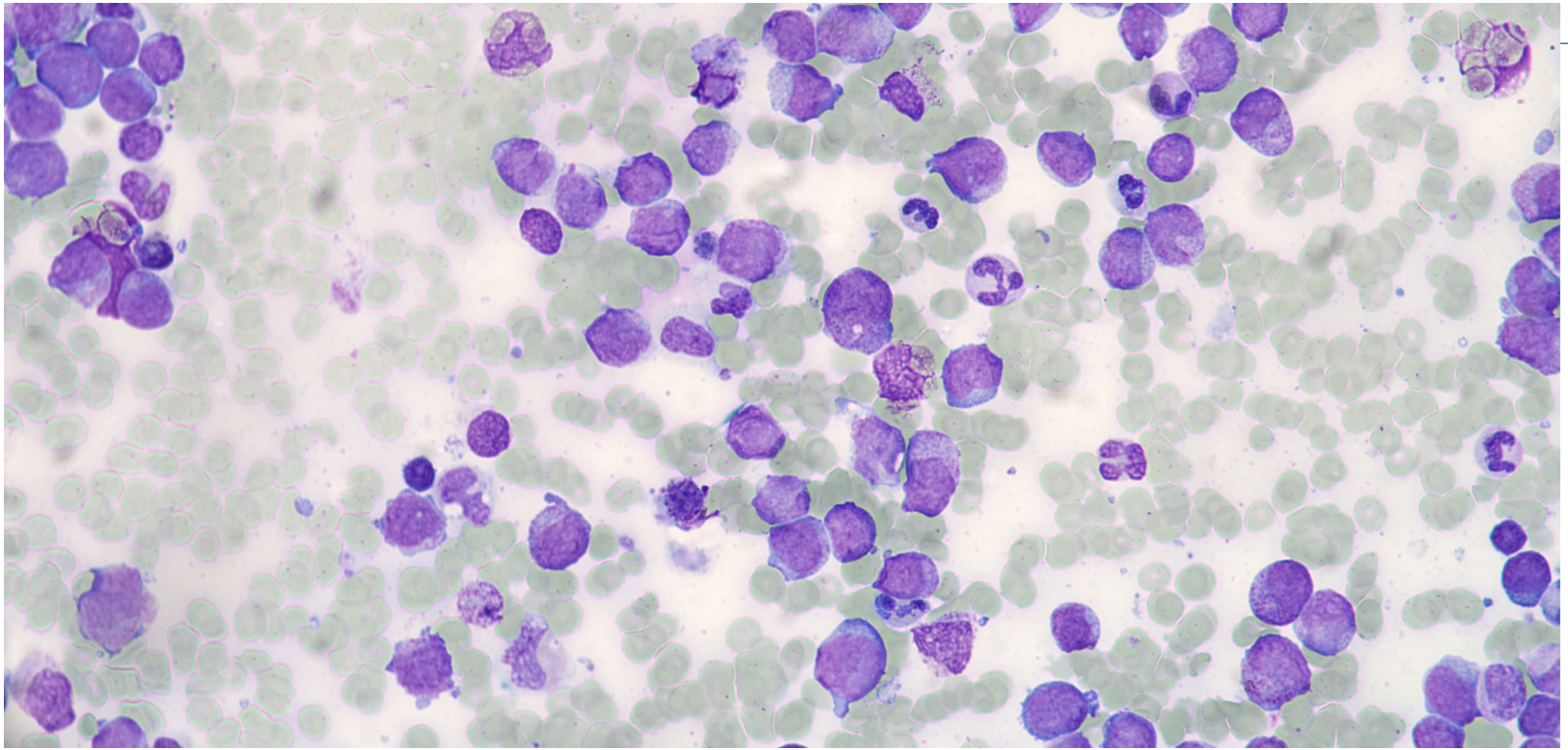
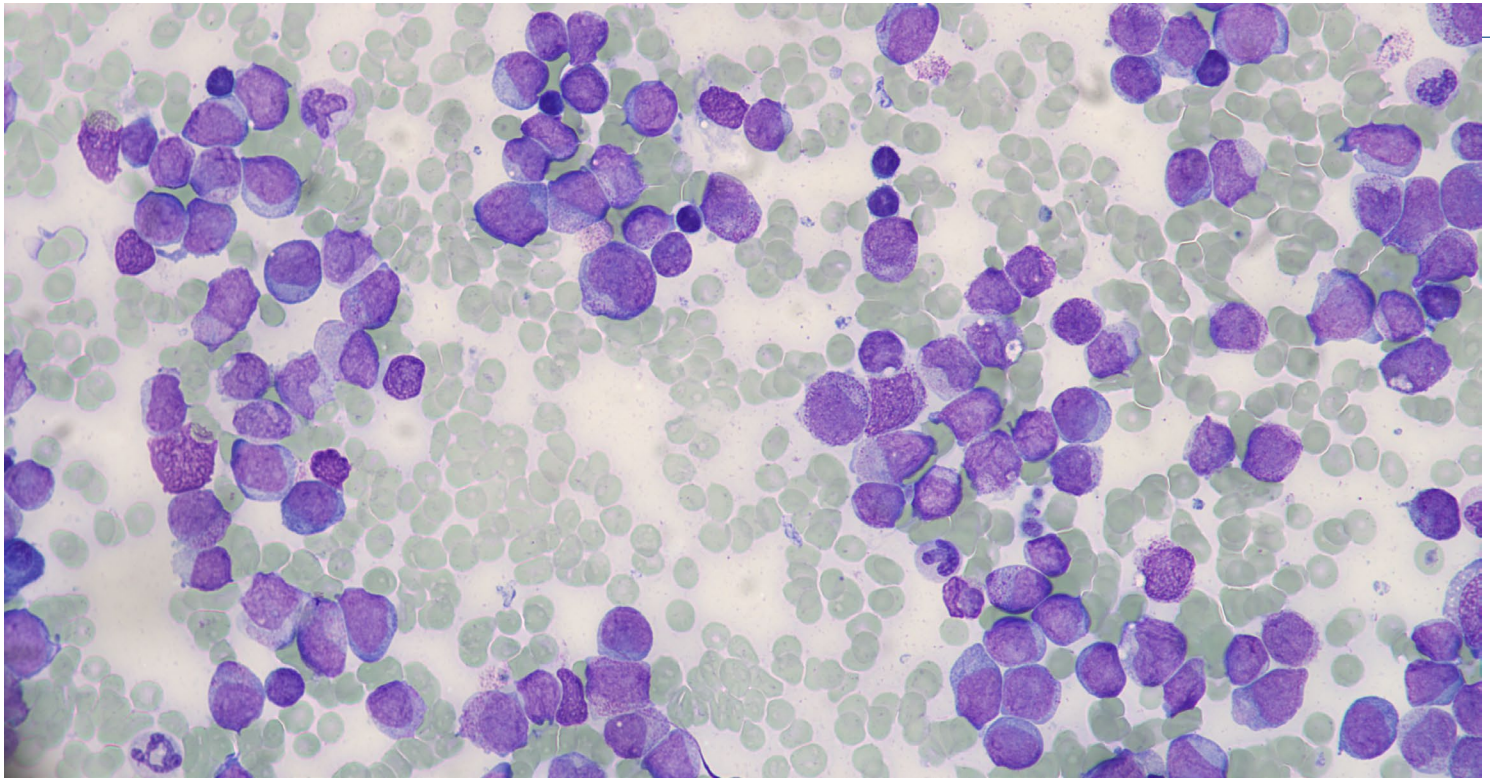
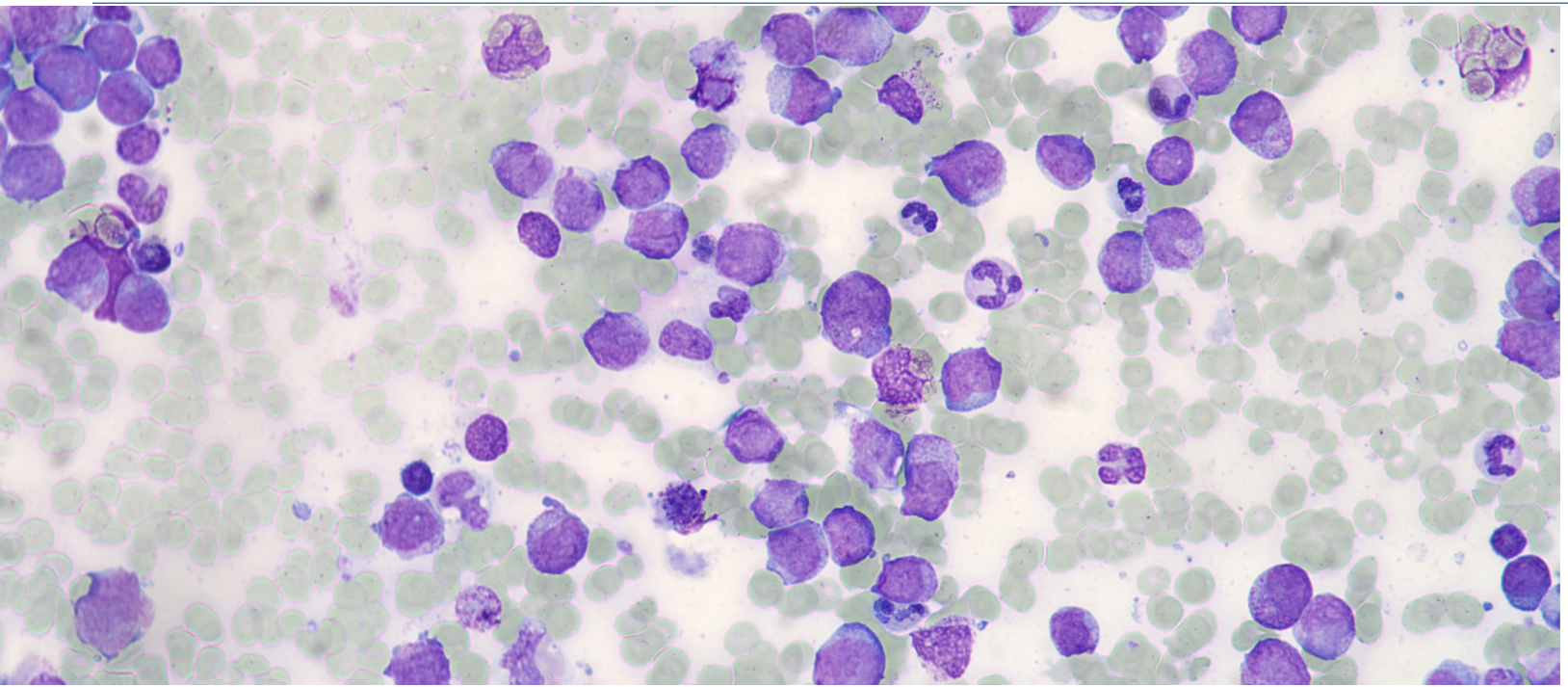
Bone marrow aspirate x 40



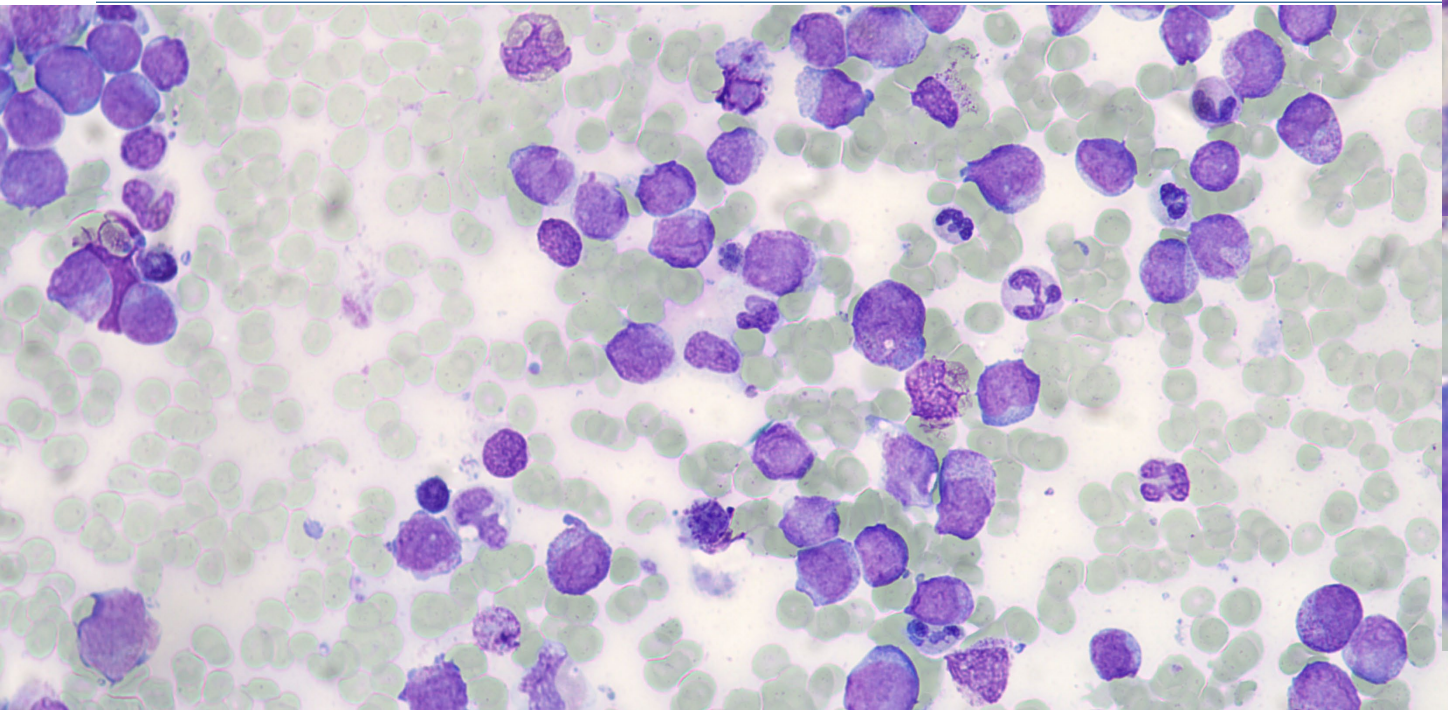
Bone marrow aspirate x 40

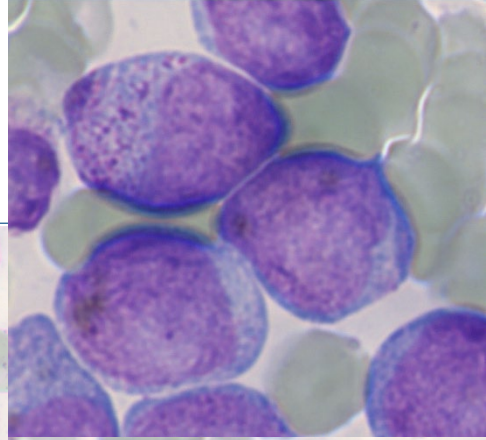


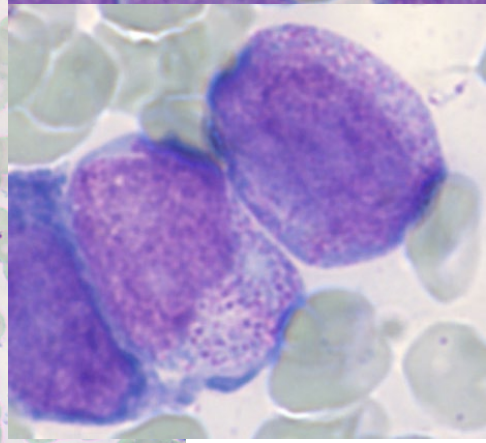
Bone marrow aspirate x 40



Bone marrow aspirate x 40







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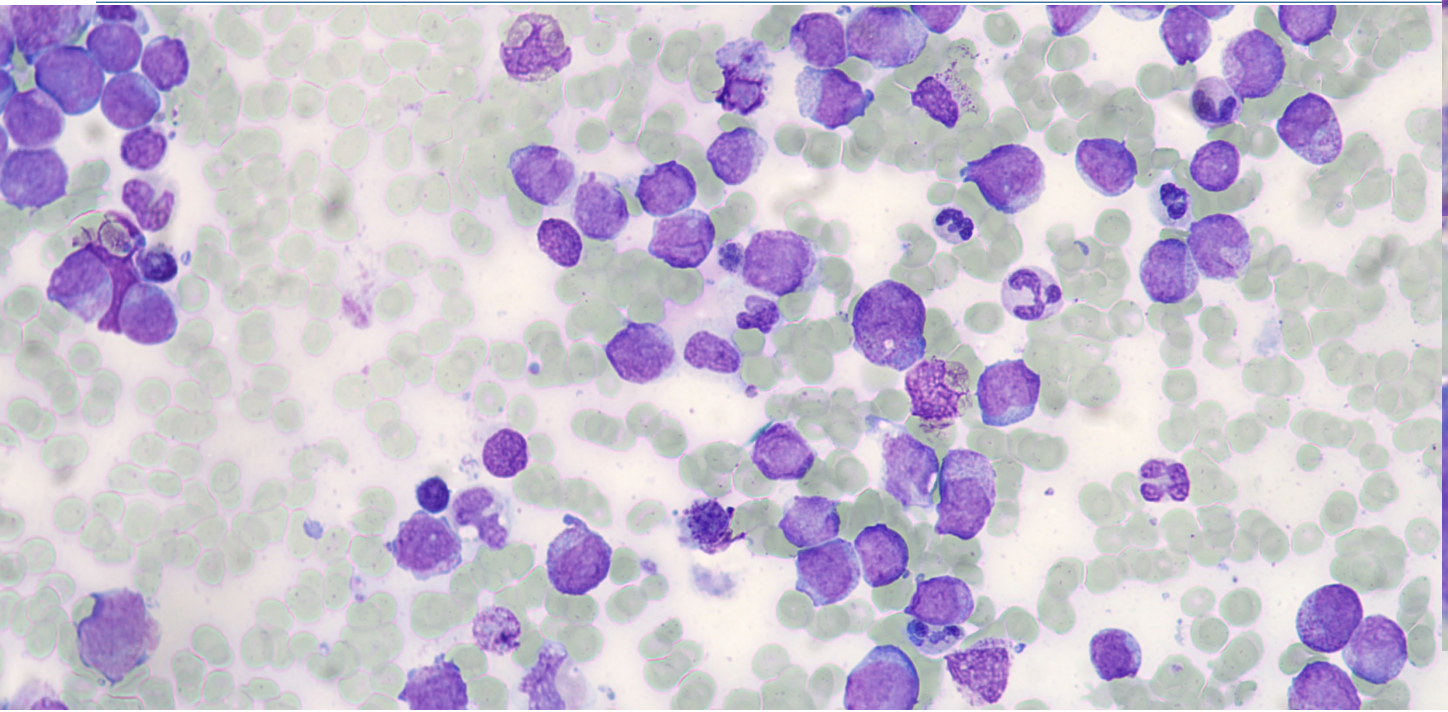

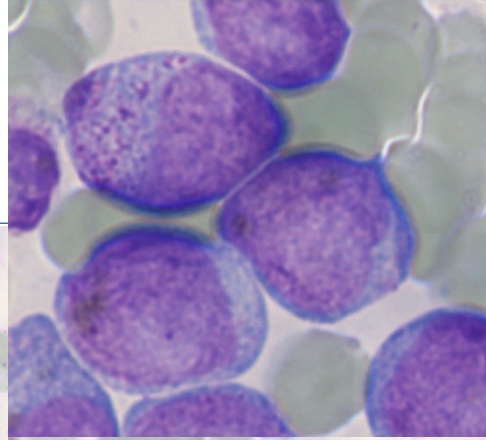

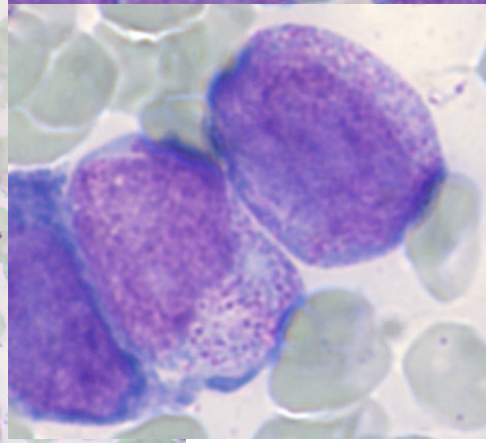

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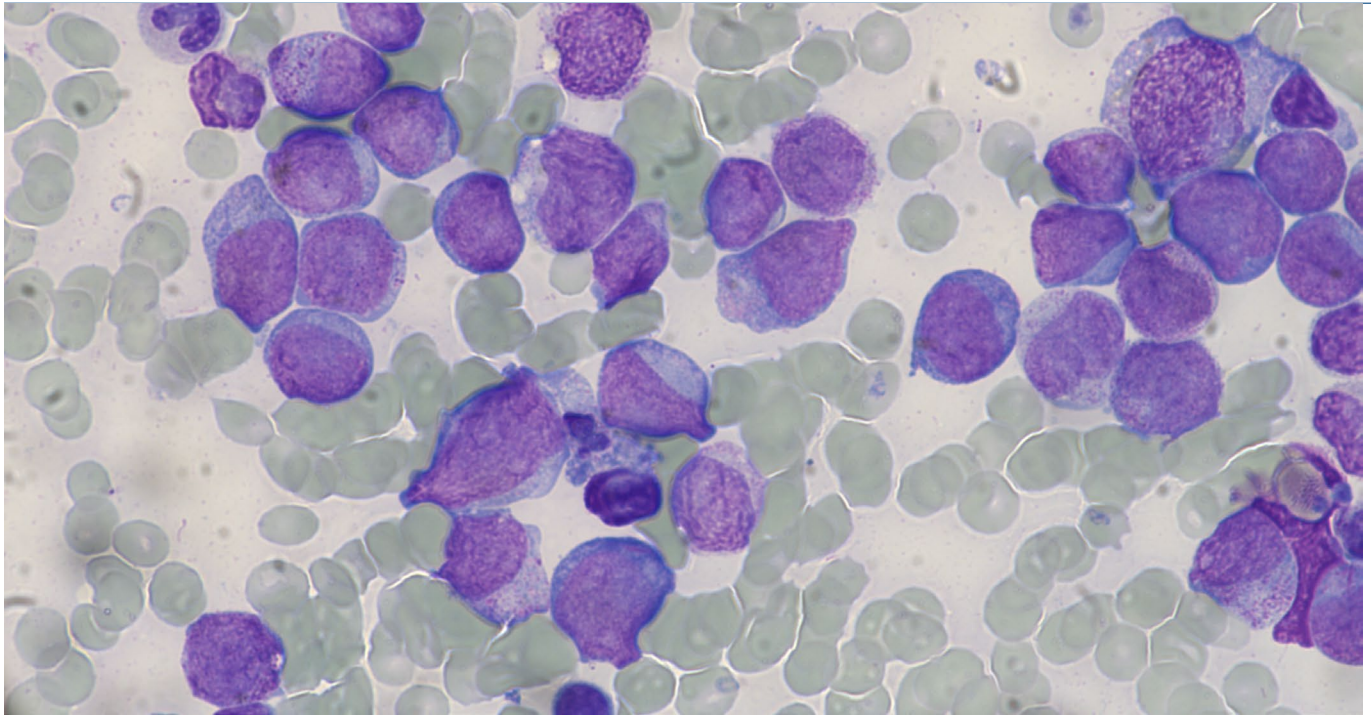
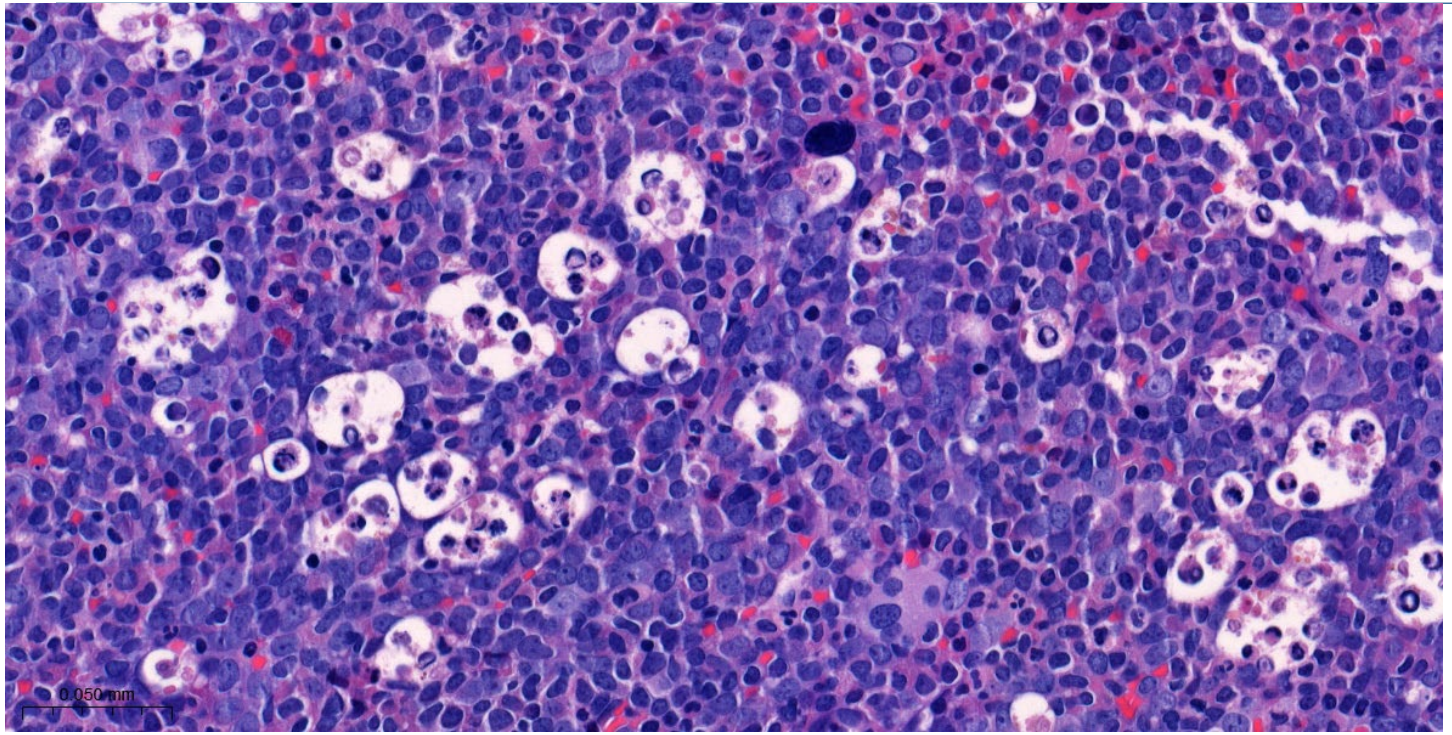
Bone marrow aspirate x 100



Bone marrow trephine x 40



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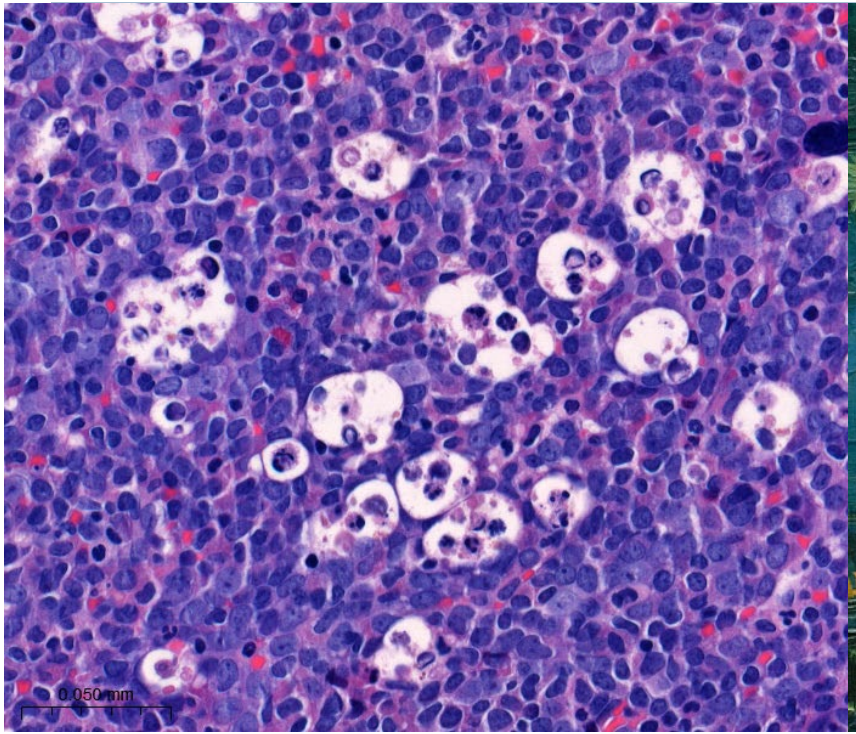
Bone marrow trephine x 40



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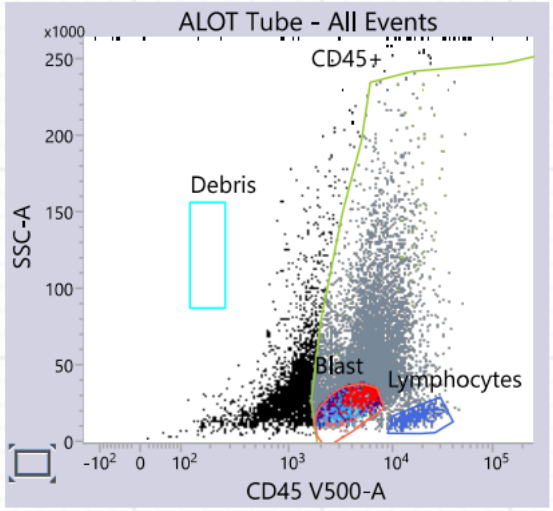
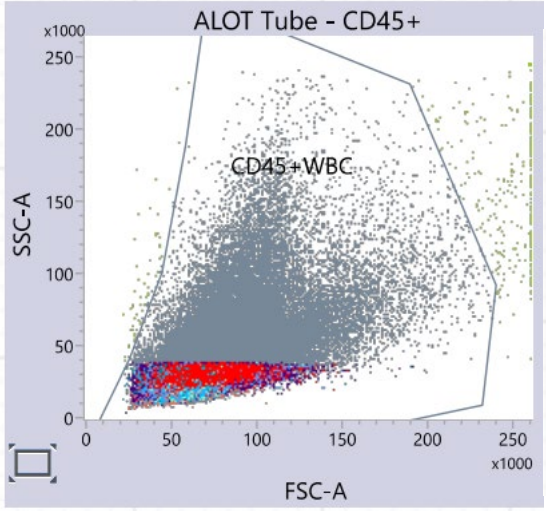
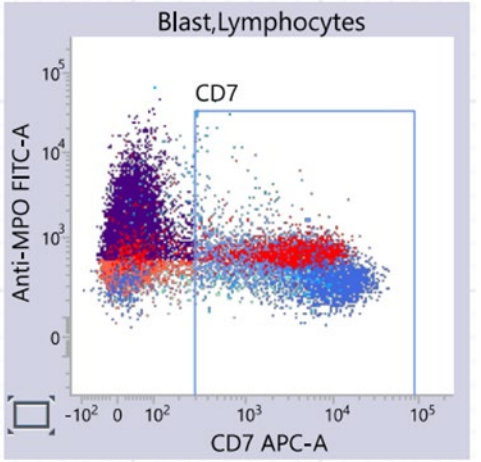
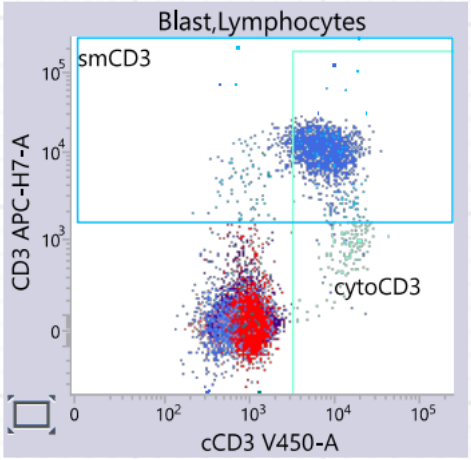
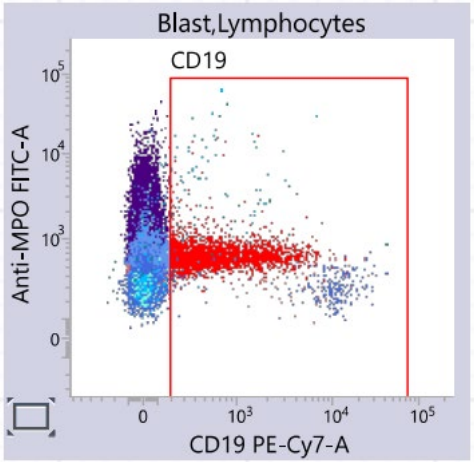
Flow

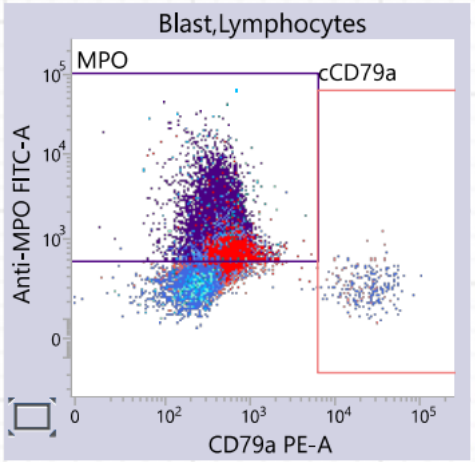

ALOT Tube - All Events
CD45+
Debris
Blast
Lymphocytes
SSC-A
CD45 V500-A

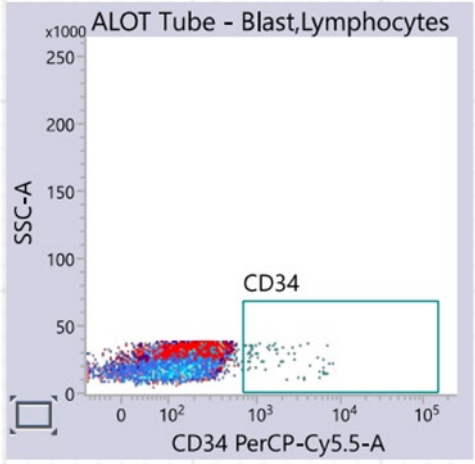

ALOT Tube - CD45+
CD45+WBC
SSC-A
FSC-A


Blast,Lymphocytes
CD7
Anti-MPO FITC-A
CD7 APC-A

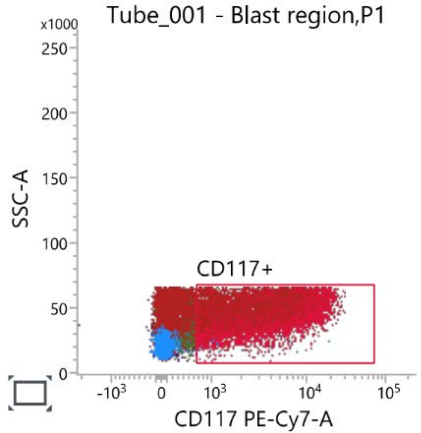

Blast,Lymphocytes
smCD3
cytoCD3
CD3 APC-H7-A
cCD3 V450-A

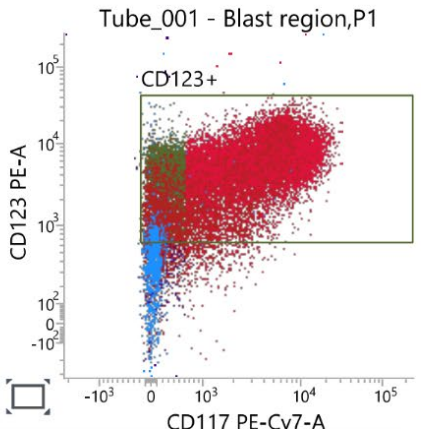

Blast,Lymphocytes
CD19
Anti-MPO FITC-A
CD19 PE-Cy7-A

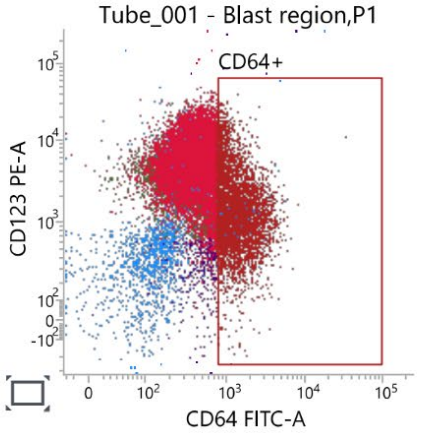

Blast,Lymphocytes
MPO
cCD79a
Anti-MPO FITC-A
CD79a PE-A

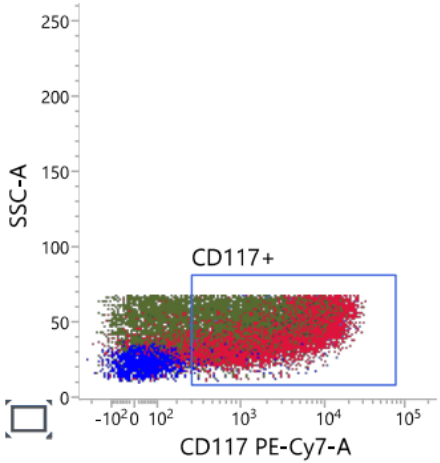

ALOT Tube - Blast,Lymphocytes
CD34
SSC-A
CD34 PerCP-Cy5.5-A

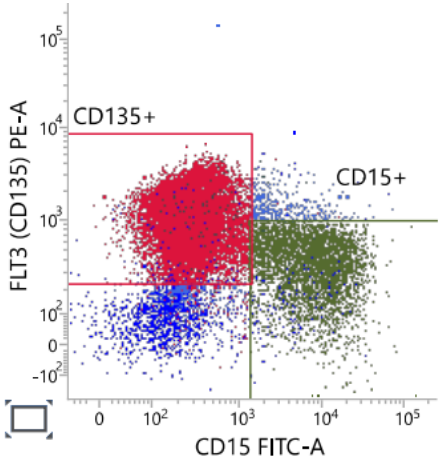
Flow

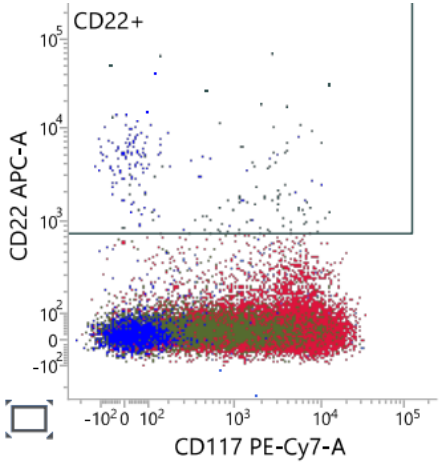












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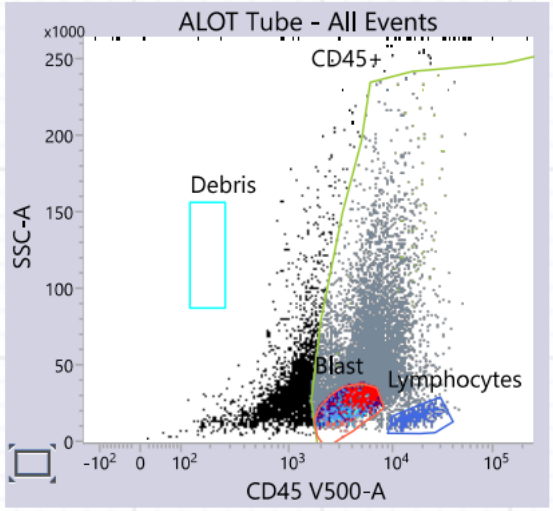
ALOT Tube - All Events
CD45+
Debris
Blast
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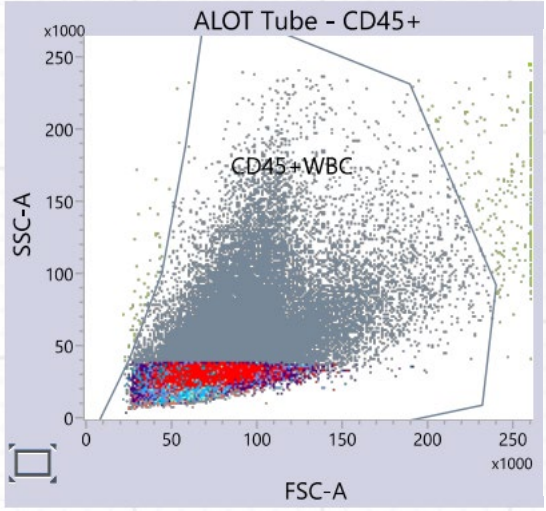
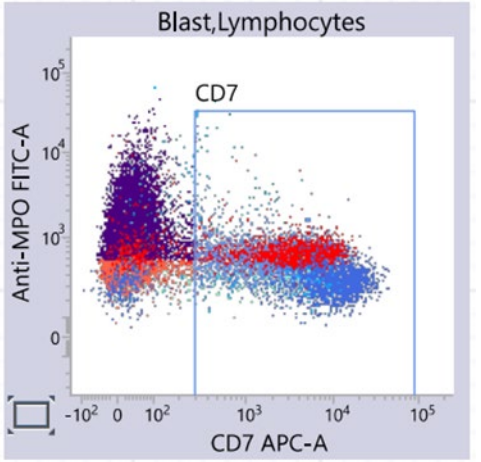
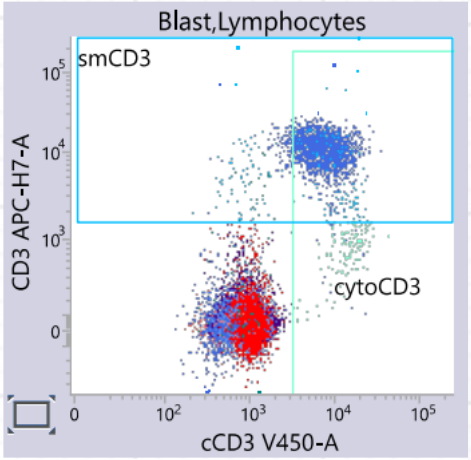
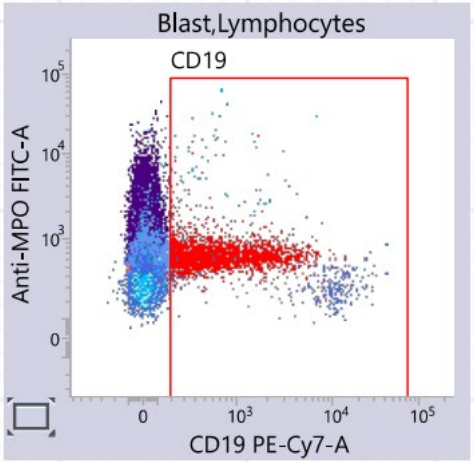
SSC-A
CD45 V500-A


ALOT Tube - CD45+
CD45+WBC
SSC-A
FSC-A


Blast,Lymphocytes
CD7
Anti-MPO FITC-A
CD7 APC-A


Blast,Lymphocytes
smCD3
cytoCD3
CD3 APC-H7-A
cCD3 V450-A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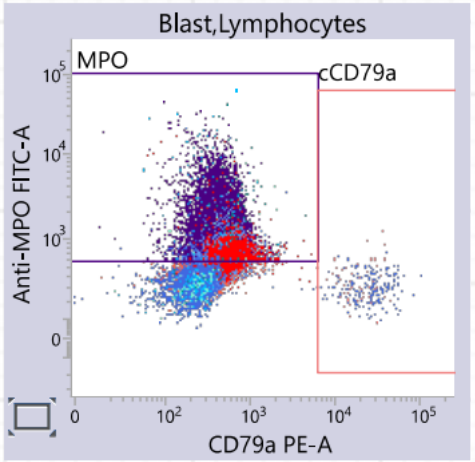
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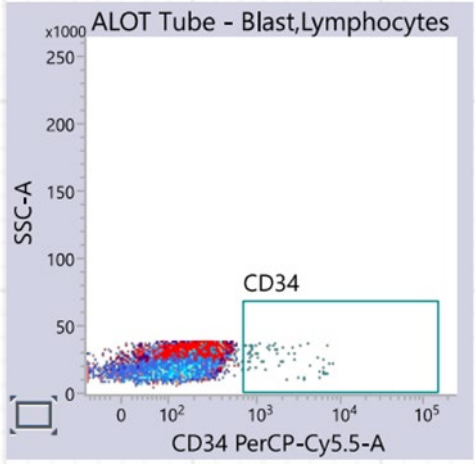
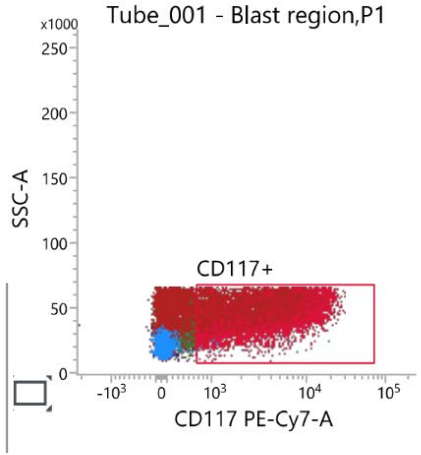
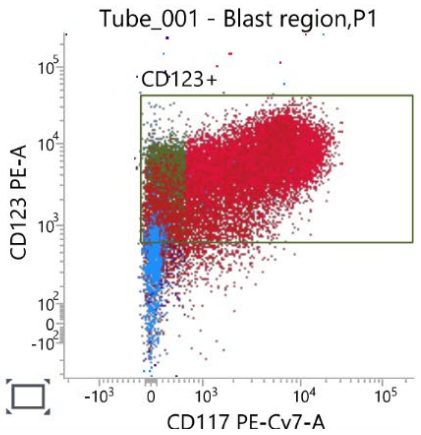
MPO
cCD79a
Anti-MPO FITC-A
CD79a PE-A

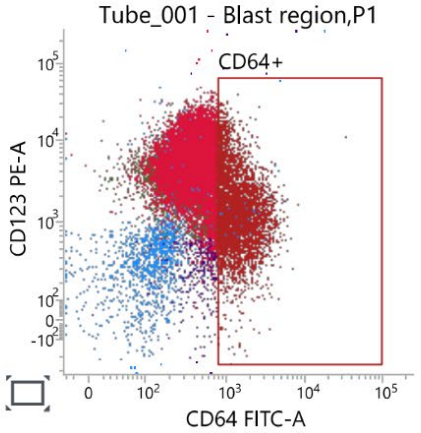

ALOT Tube - Blast,Lymphocytes
CD34
SSC-A
CD34 PerCP-Cy5.5-A

Flow

Blasts of TNCs: 47.3 %
CD117+ of blasts: 69.7 %
CD123+ of blasts: 93.3 %
CD64+ of blasts: 21.6 %

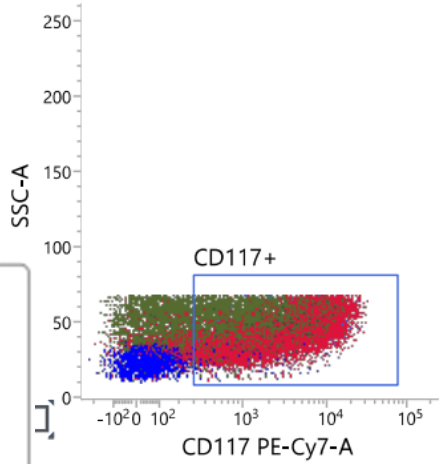


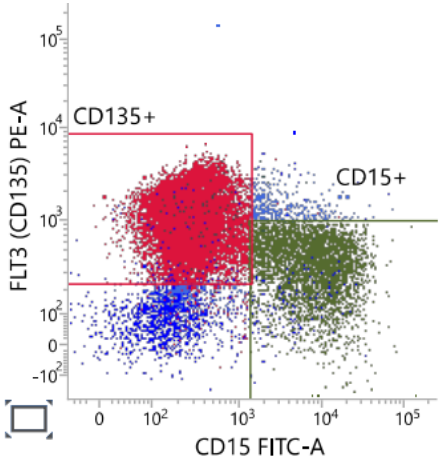


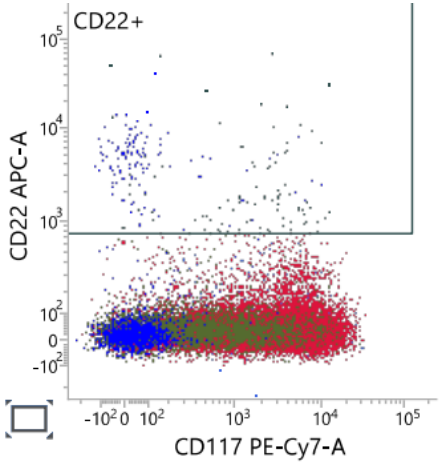


Statistics

Blasts of TNCs: 48.9 %
CD117+ of blasts: 82.5 %
CD15+ of blasts: 17.9 %
CD135+ of blasts: 77.8 %
CD22+ of blasts: 0.4 %







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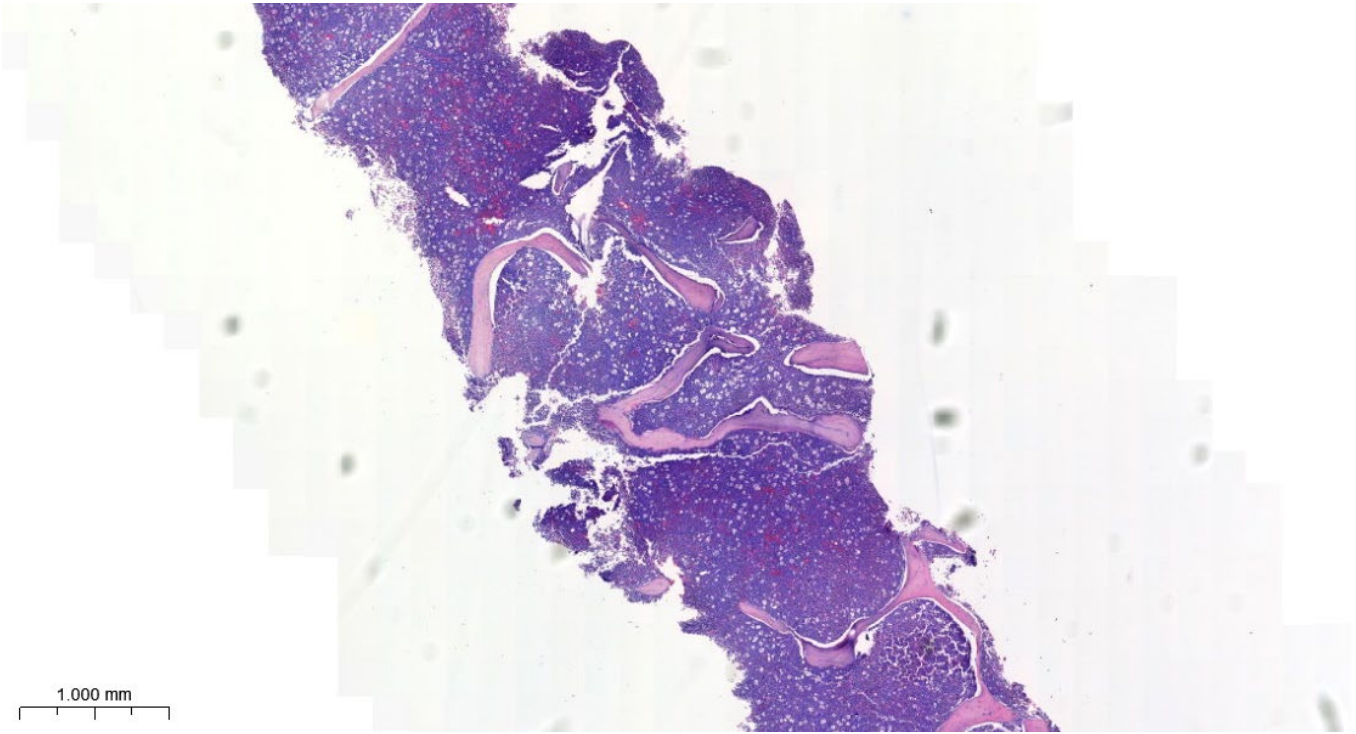
Molecular

- Cytogenetics show add(4p)
- Molecular analysis found an NPM1 mutation 28%
- (SF3B1 48%, FLT3 4%, TET2 47%, TET2 43%, KIT 43%, TET2 11%).

Bone marrow trephine x 2



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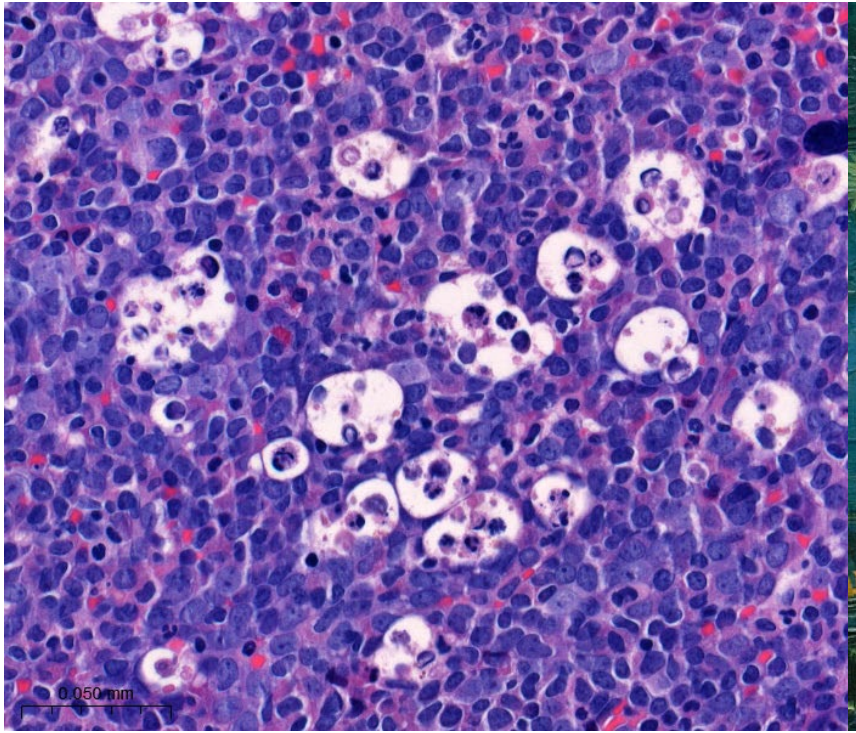
Bone marrow trephine x 40



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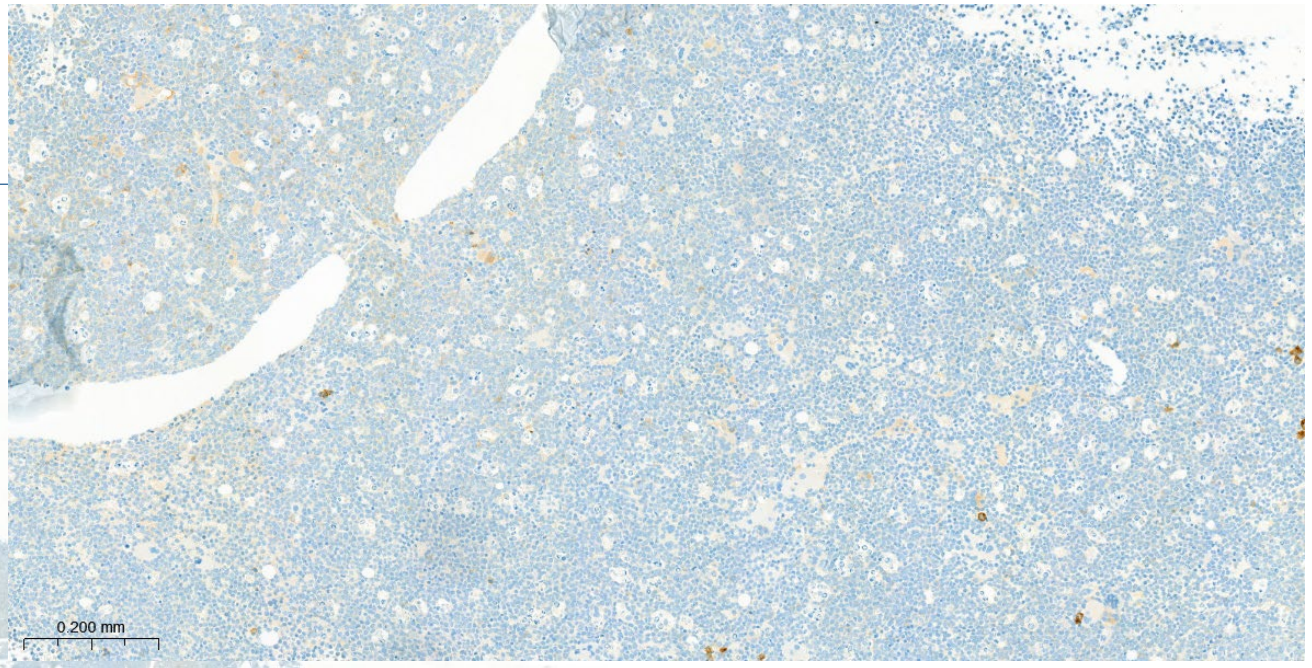
CD71



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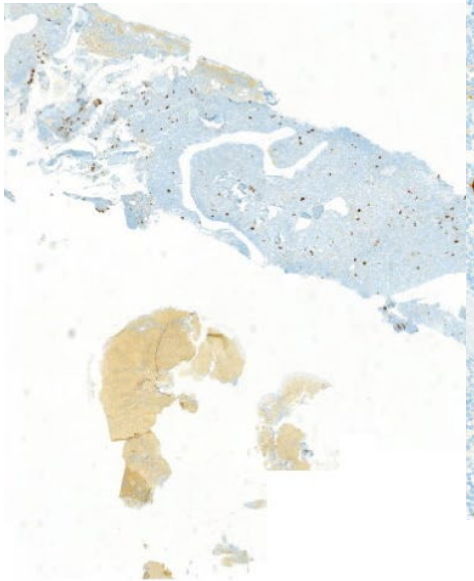
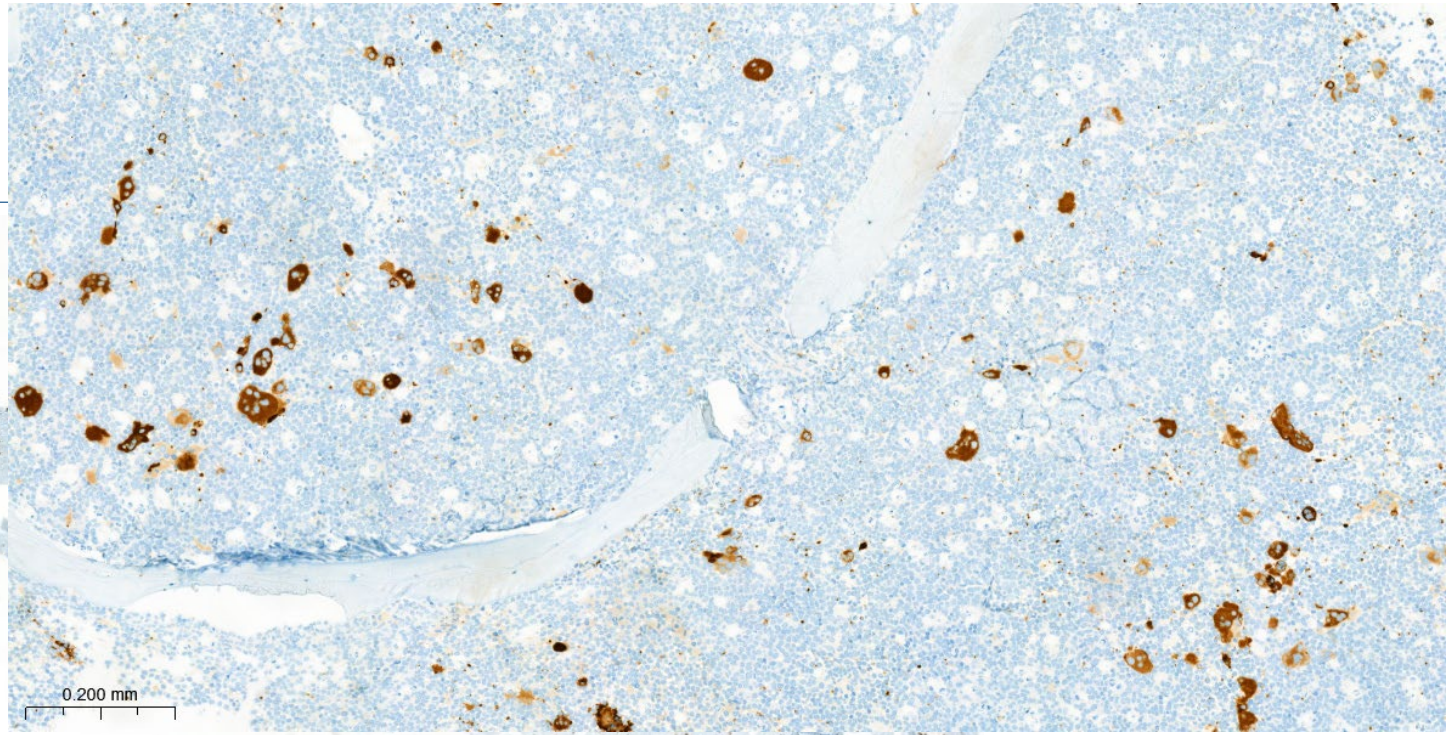
CD61





2.000 mm

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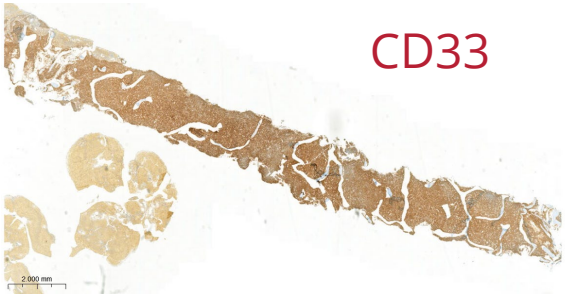
What about the blasts?



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What about the blasts?

CD14

CD34

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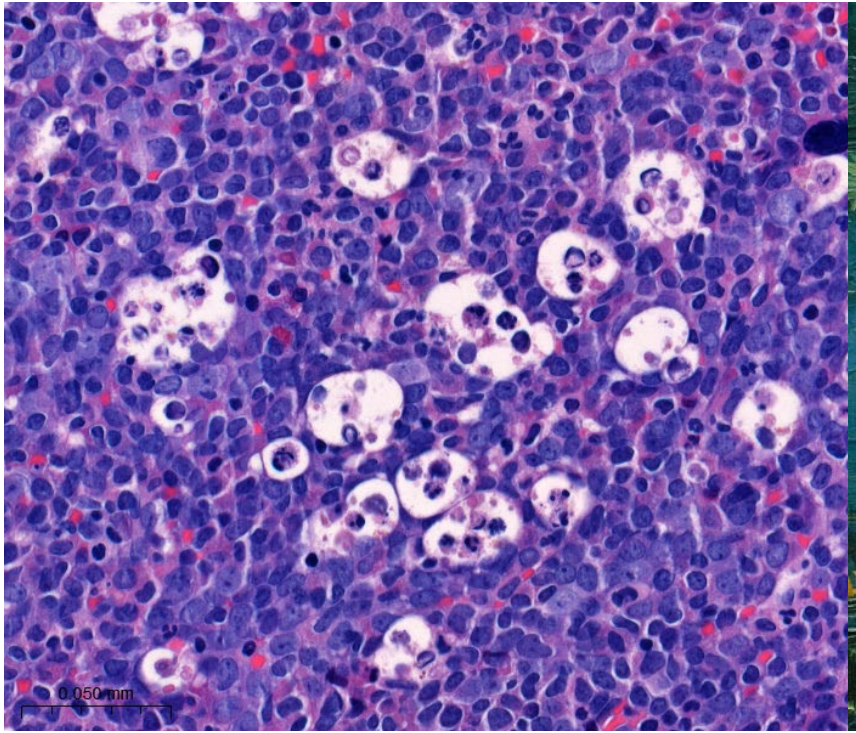
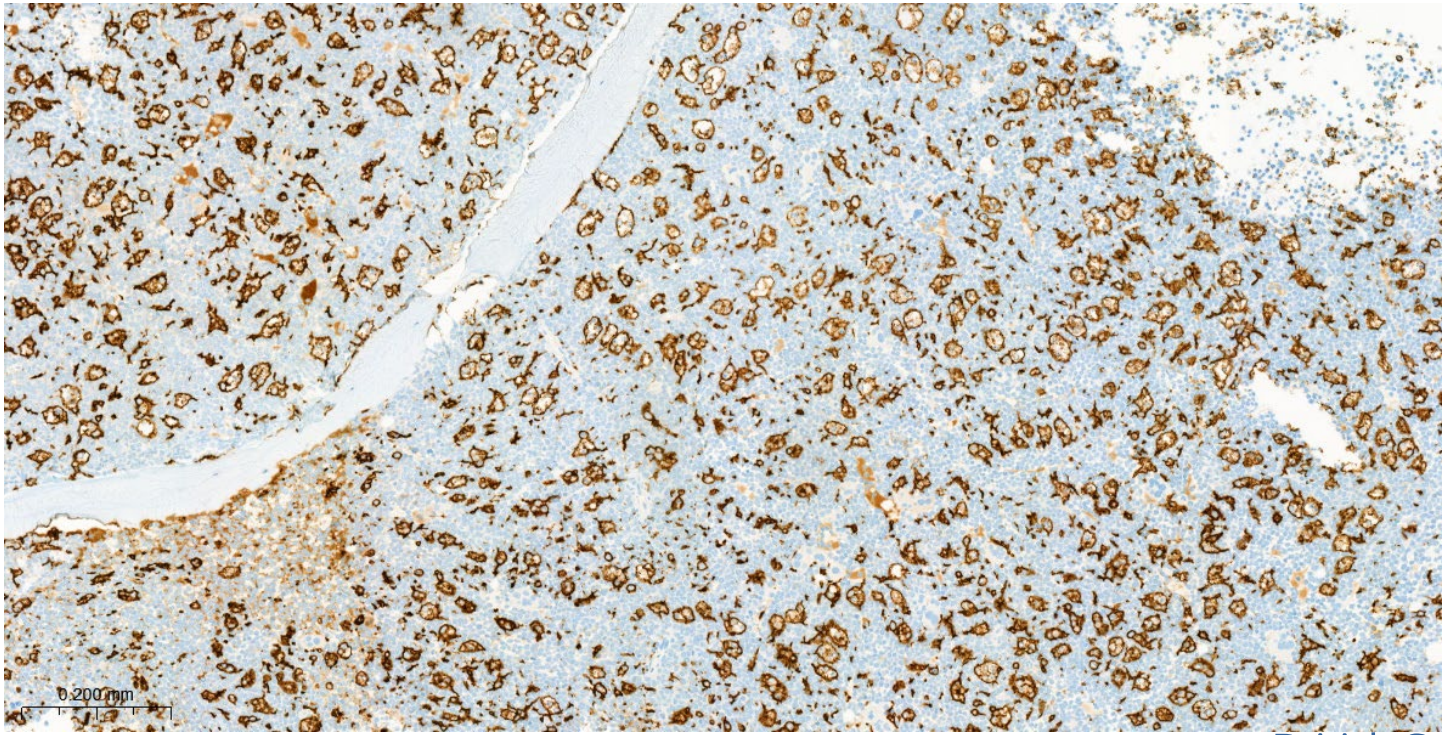
The starry sky?



The starry sky?

CD163

The starry sky?



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What's your final diagnosis?

a) Acute lymphoblastic leukaemia
b) Burkitt lymphoma
c) Hemophagocytic lymphohistiocytosis
d) Acute myeloid leukaemia, not otherwise specified
e) AML with mutated *NPM1*
f) AML with myelodysplasia-related cytogenetic abnormalities
g) APML

Diagnosis

- *AML with NPM1 mutation*

Management

- Refractory to two cycles of Ven/Aza
- Trial of gliteritinib
- Severe disease with poor outcome

Literature

- NPM1 gene rearrangement in about a third of AML cases
- AML with starry sky appearance has been reported – associated with high proliferation index
- Found to have co-mutations activating RAS pathway – which may result in the presentation with a high WCC and LDH

American Journal of Hematology AJH

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Starry sky pattern predicts RAS pathway activation in *NPM1*-mutated acute myeloid leukemia

Alessandra Venanzi, Valeria Cardinali, Vincenzo Perriello, Francesco Albano, Gaetano Cimino, Giovanni Martino, Andrea Marra, Paolo Sportoletti, Vibeke Andresen, Bjorn T. Gjertsen, Simona Sica, Patrizia Chiusolo, Maria Paola Martelli, Enrico Tiacci, Brunangelo Falini ... See fewer authors

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