**Supplemental tables**

**Supplemental Table 1 Primer sequences**

| Gene | | Primer sequence |
|---|---|---|
| HOXA5 | Forward | AGATCTACCCCTGGATGCGC |
| | Reverse | CCTTCTCCAGCTCCAGGGTC |
| HOXA6 | Forward | GAGCCCGGTTTACCCTTGGATG |
| | Reverse | TCTGGTAGCGCGTGTAGGTCTG |
| HOXA7 | Forward | ATCACTCTACCTCGTAAAACCGAC |
| | Reverse | ACATAATACGAAGAACTCATAATTTTG |
| HOXA9 | Forward | ACACTATGAAACCGCCATTGG |
| | Reverse | GGAAACCCCAGATTCATCAAGG |
| HOXA10 | Forward | ATGATATGGCTTTTTCCCCCAG |
| | Reverse | TTCTTTGTGTTTGCTTGGTGCTG |
| HOXB5 | Forward | GGCAGACTCCGCAAATATTCCC |
| | Reverse | GGTAGCGGTTGAAGTGGAACTC |
| MEIS1 | Forward | TCTGCCACCGGTATATTAGC |
| | Reverse | GAACGAGTAGATGCCGTGTC |
| PBX3 | Forward | ACAGTGATGGCCTTGGAG |
| | Reverse | GGCCTTCTGTAGGAGAAGTC |
| BAALC | Forward | AATCCACCTGGCTCACCTAC |
| | Reverse | TTGGAGGGCAGTCCATCTTC |
| MN1 | Forward | GTACATGCCCGCTGACAAGG |
| | Reverse | GAGGTCGTGGGCTTCTTTGC |

**Supplemental Table 2 *NPM1* mutation in discrepant cases**

| No. | NPM1 mutation |
|---|---|
| 1 | Type I* |
| 2 | Del GGAGGAA / Insertion CCCTAGCTAGG (exon 12) |
| 3 | Type A* |
| 4 | Type A* |
| 5 | ND** |

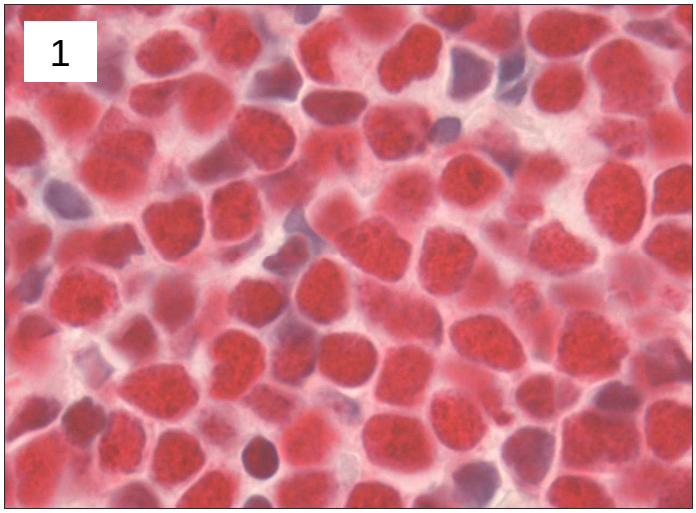
Numbering of cases is according to Table 2. *Mutation types according to Falini et al. Blood 2007, Vol 109;874-885. ND, not determined because not enough material left for sequencing analysis.

**Legend Supplemental Figure 1**

**Supplemental Figure 1 Immunohistochemistry for NPM1 of all cases**

Immunohistochemistry of all cases for NPM1 on 1-2 µm tissue sections, using an alternative staining procedure. The NPM1 antigen was retrieved with TRIS EDTA buffer (pH 8.5). Slides were incubated with 1:50 diluted supernatant of the anti-NPM1 antibody (clone 376, 1G3) (kindly provided by Prof. Falini, Perugia, Italy). NPM1 was visualized using the ultraview universal alkaline phosphatase red detection kit with fast red/naphthol (Ventana). All cases are numbered according to Table 2. The arrows indicate cytoplasmic expression.

Cases 1 and 4: only nuclear pattern. Case 2: two different areas from the same biopsy, 2a: nuclear staining, partially in probably erythroblasts, 2b: small clusters of myeloblasts with a nuclear and cytoplasmic staining. Case 3: two different areas from the same biopsy, 3a: almost exclusively nuclear staining in more mature leukemic cells, 3b: small clusters of blasts with a nuclear and cytoplasmic staining. Case 5: two subsequent biopsies (interval one day) in a patient with probably a myelomonocytic leukemia and bone marrow fibrosis resulting in a dry tap. The first biopsy (5b) shows many blasts with obvious nucleoli with a combined nuclear and cytoplasmic staining. The second biopsy taken one day later (5a) showed a less blastic appearance of the cells with only nuclear staining. Cases 6-9 show an obvious combined nuclear and cytoplasmic staining, albeit in case 7 in only a minority of the cells.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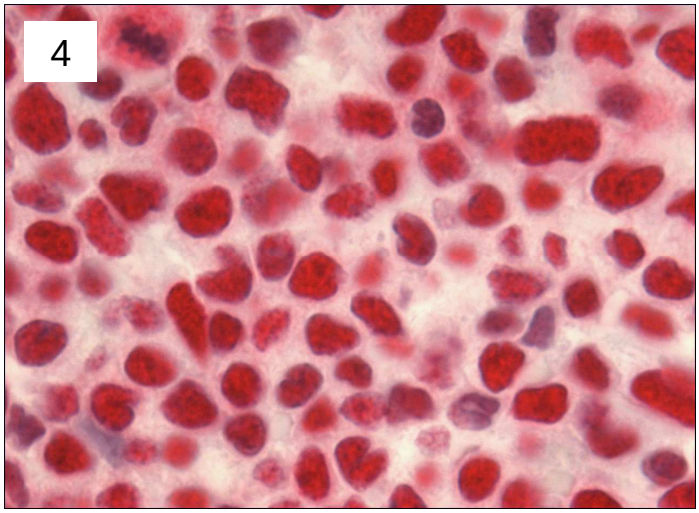
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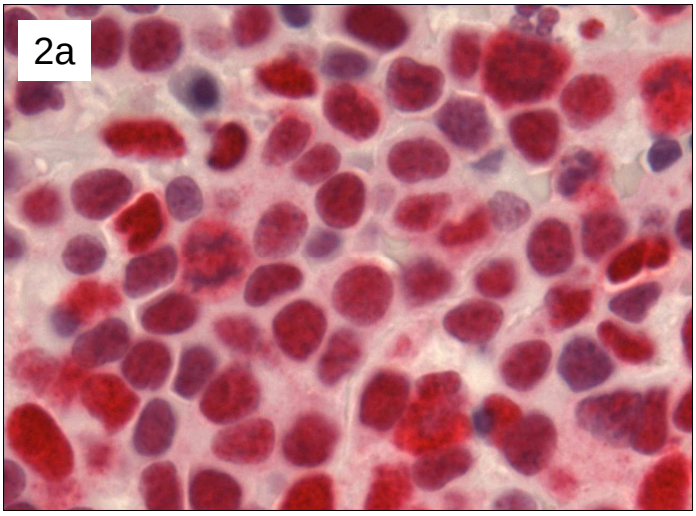
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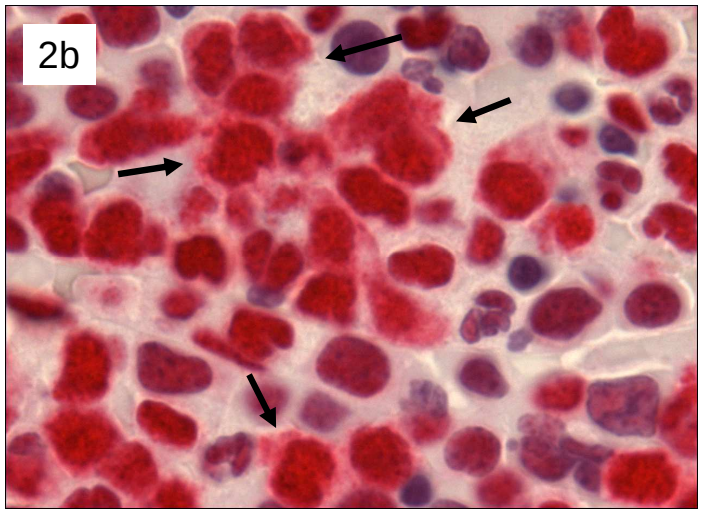
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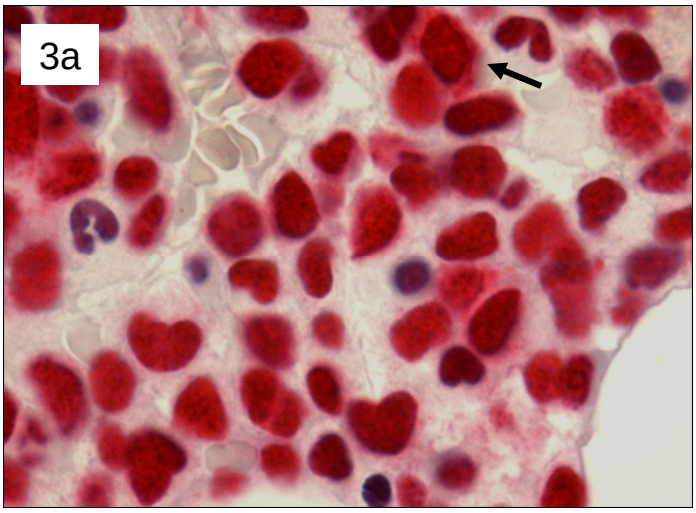
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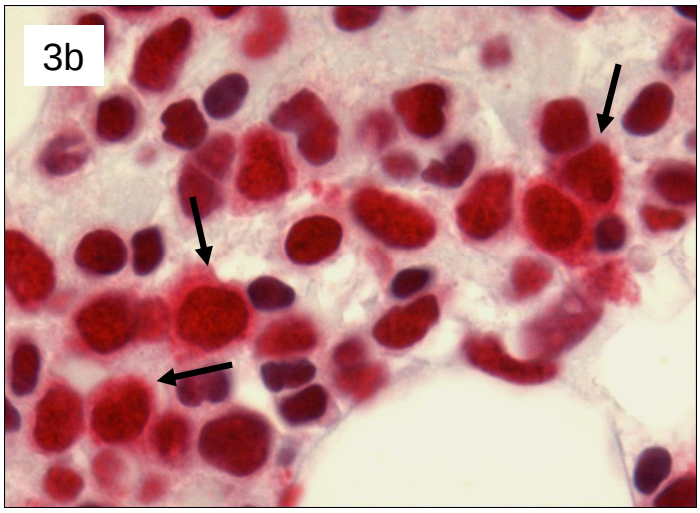
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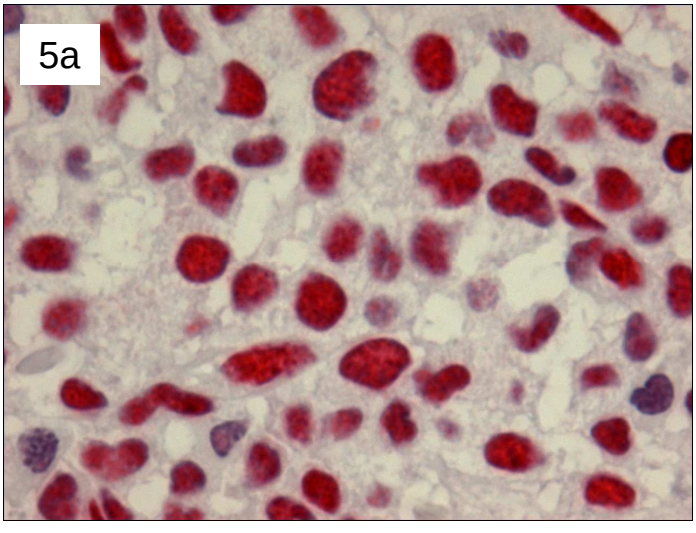
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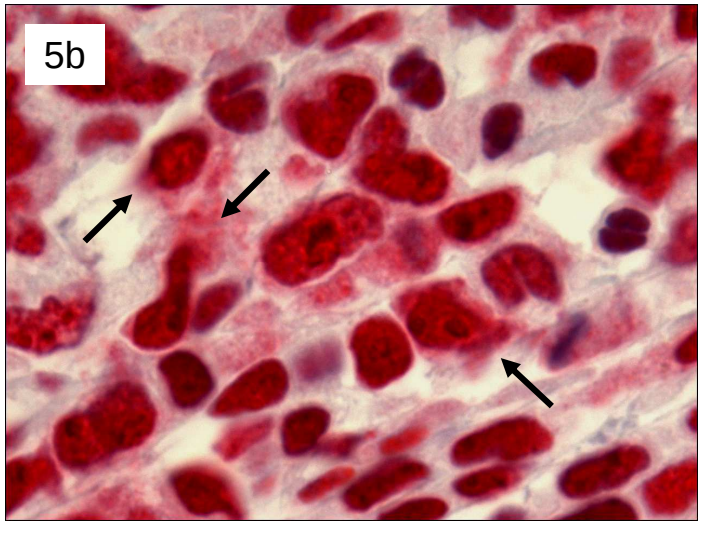
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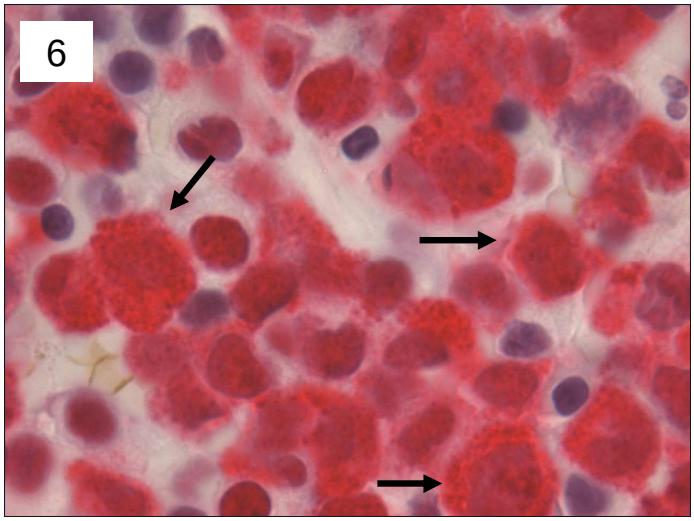
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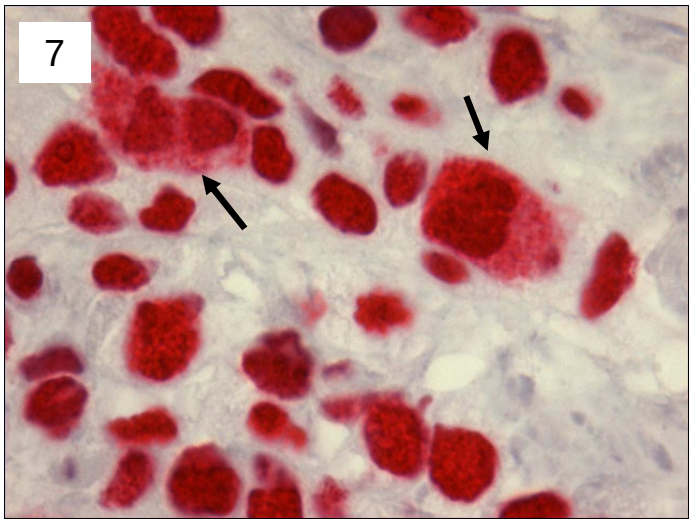
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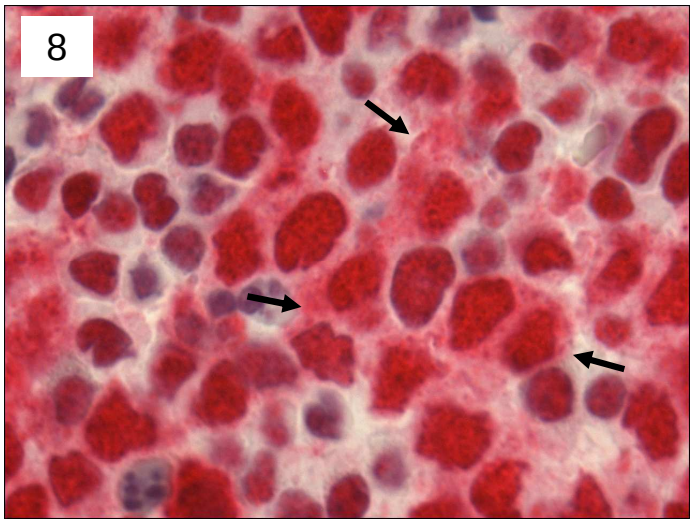
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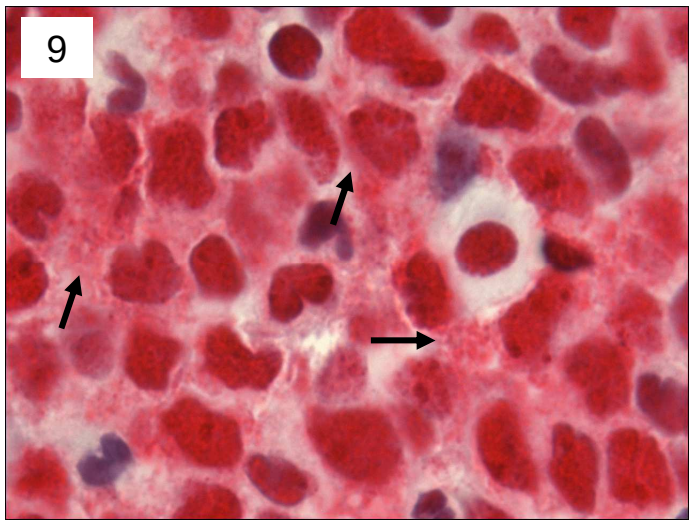
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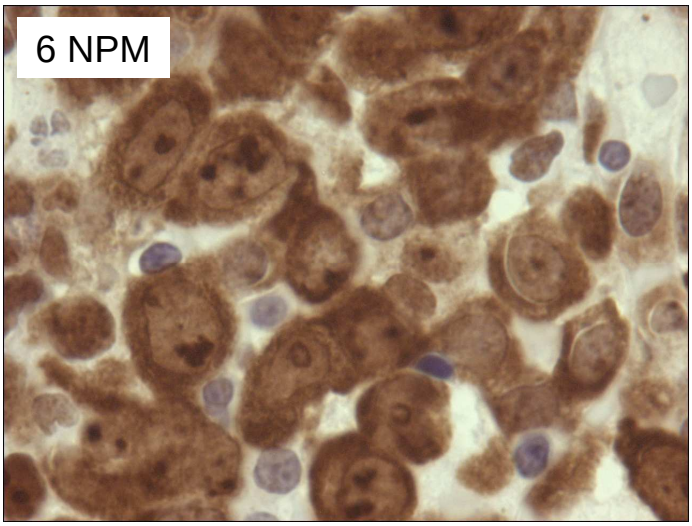
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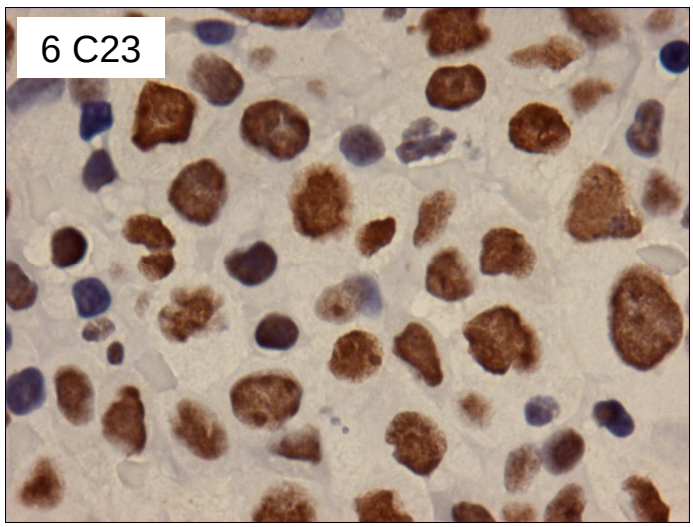
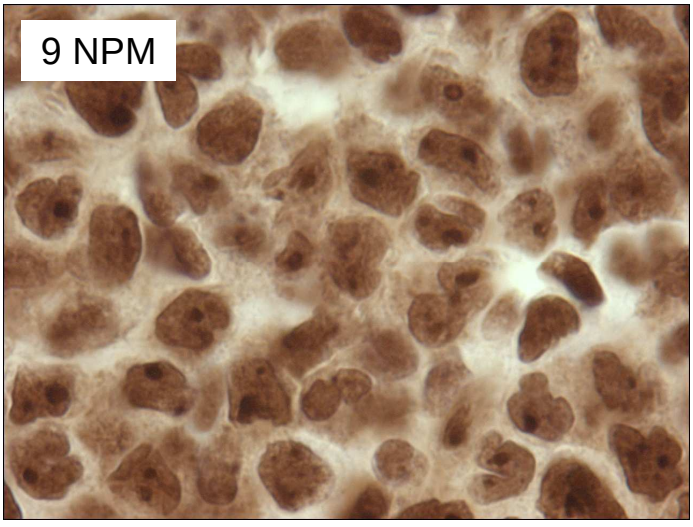

6 C23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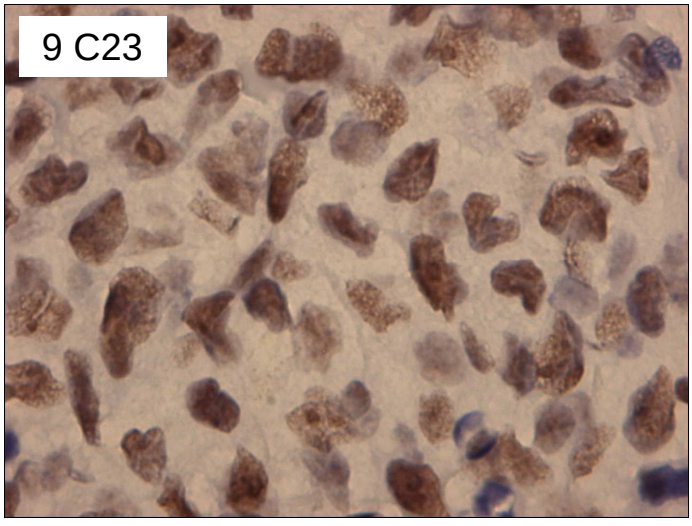
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