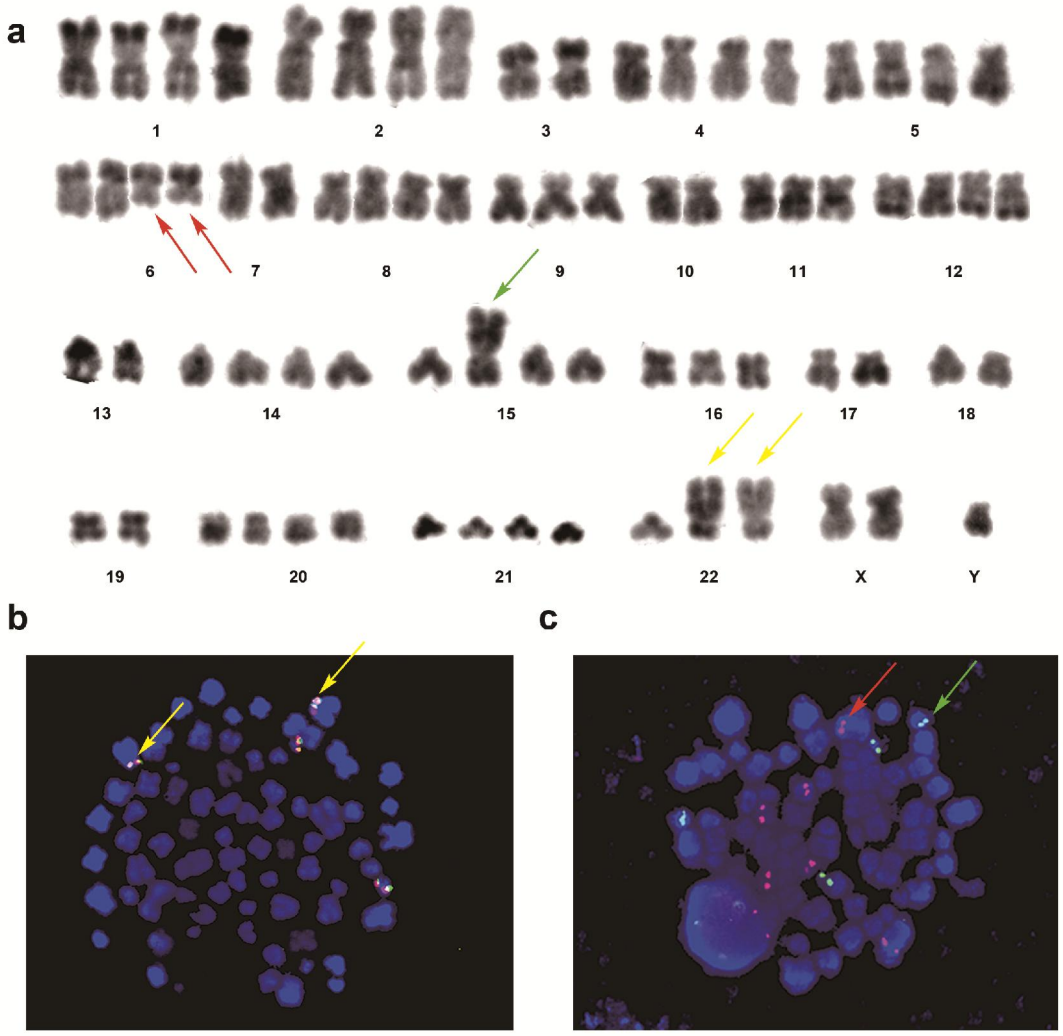
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Figure S1: Karyotype and fluorescence *in situ* hybridization (FISH) analysis (case 2). a: karyotype (R-banding): 74,XXY,+1,+der(2),-3,+4,+5, del(6)(q22),+del (6)(q22), -7,+8,-10,+12,-13,+14,+der(15),-17,-18,-19,+20,+21, 22p+,+22p+. 6q- (red arrow), der (15) (green arrow), 22p+ (yellow arrow). b: FISH analysis with GSP *EWSR1* dual color break-apart probe (located at 22q12). In clear metaphase, the picture shows four fusion signals (yellow arrow) signifying 22p+×2 (yellow arrow). c: FISH analysis with GLP *AML1 / ETO* dual color fusion probe (located at 21q22/8q22). In metaphase, show six copies of *ETO* (red arrow) and four copies of *AML1* (green arrow).

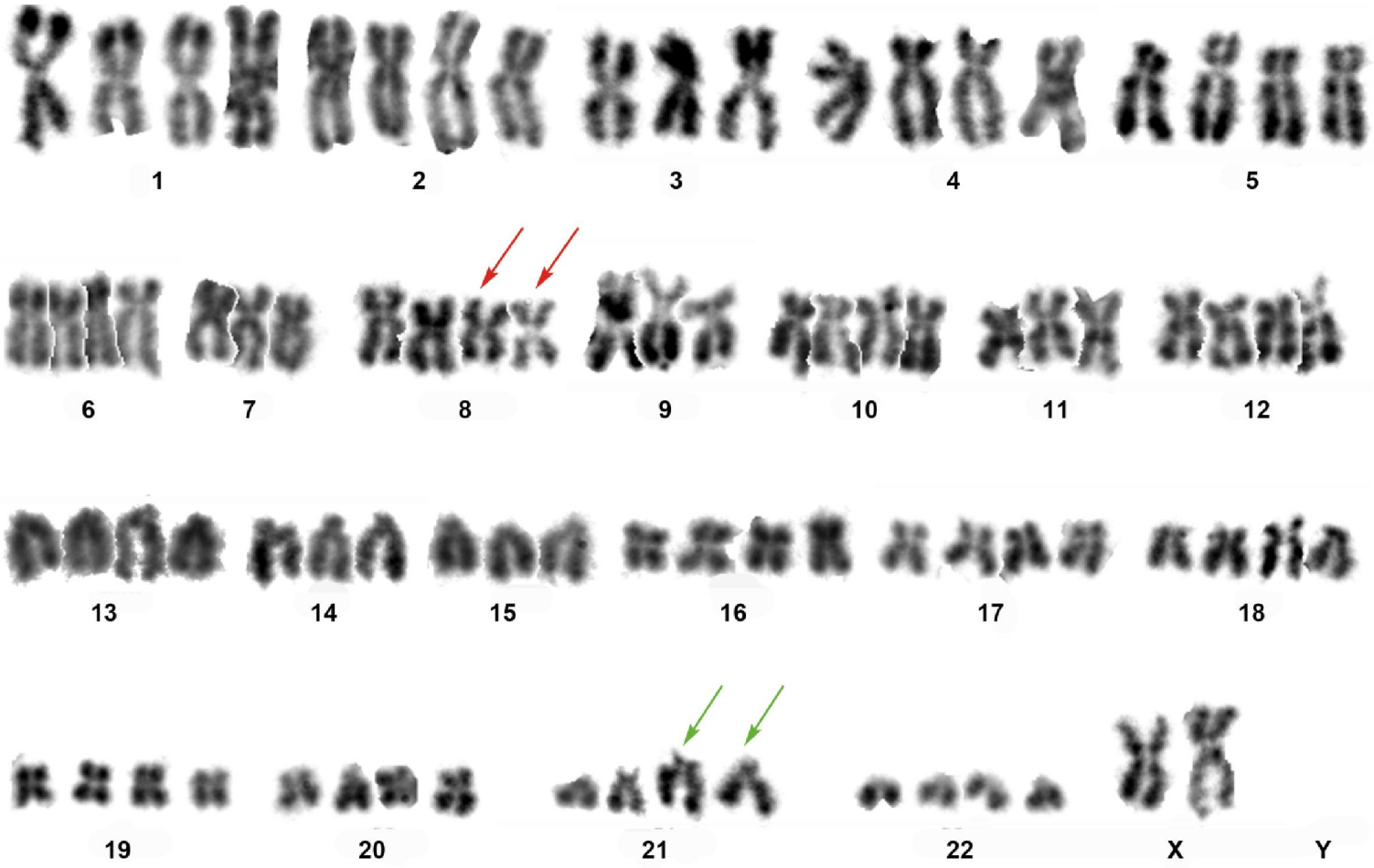

Figure S2: karyotype (R-banding) (case 6): 84,XX,-X,-X,add(1)(p36),-3,-7,-9,-11,-14,-15,t(8;21)(q22;q22)×2. 8q- (red arrow), 21q+ (green arrow).

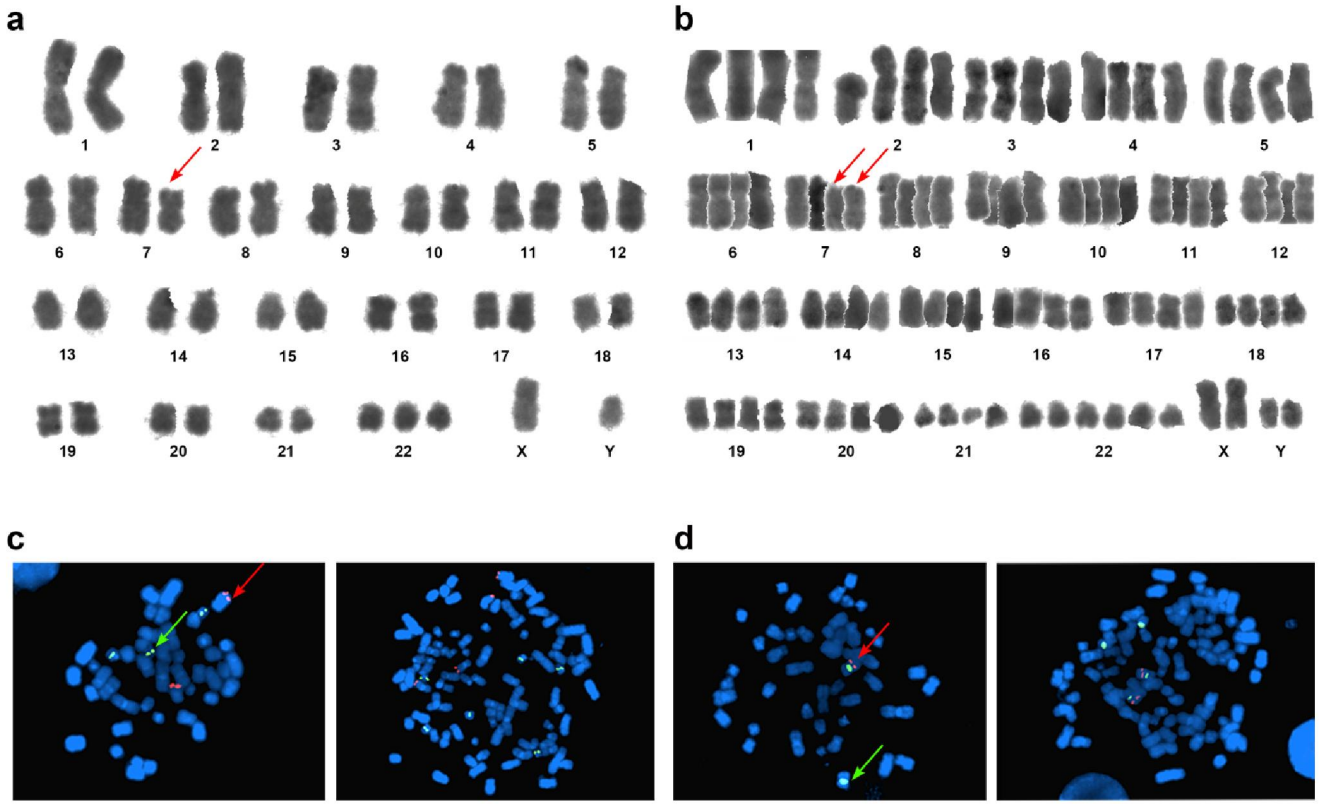

Figure S3: Karyotype and FISH analysis (case 8). a: karyotype of diploidy (R-banding): 47, XY, del(7)(q31), +22. 7q- (red arrow). b: karyotype of tetraploidy (R-banding): 94, XXYY, del(7)(q31)×2,+22,+22.7q- (red arrow). c: FISH analysis with GLP *BCR /ABL* dual color fusion probe (located at 22q11/9q34). In metaphase, detecting thre

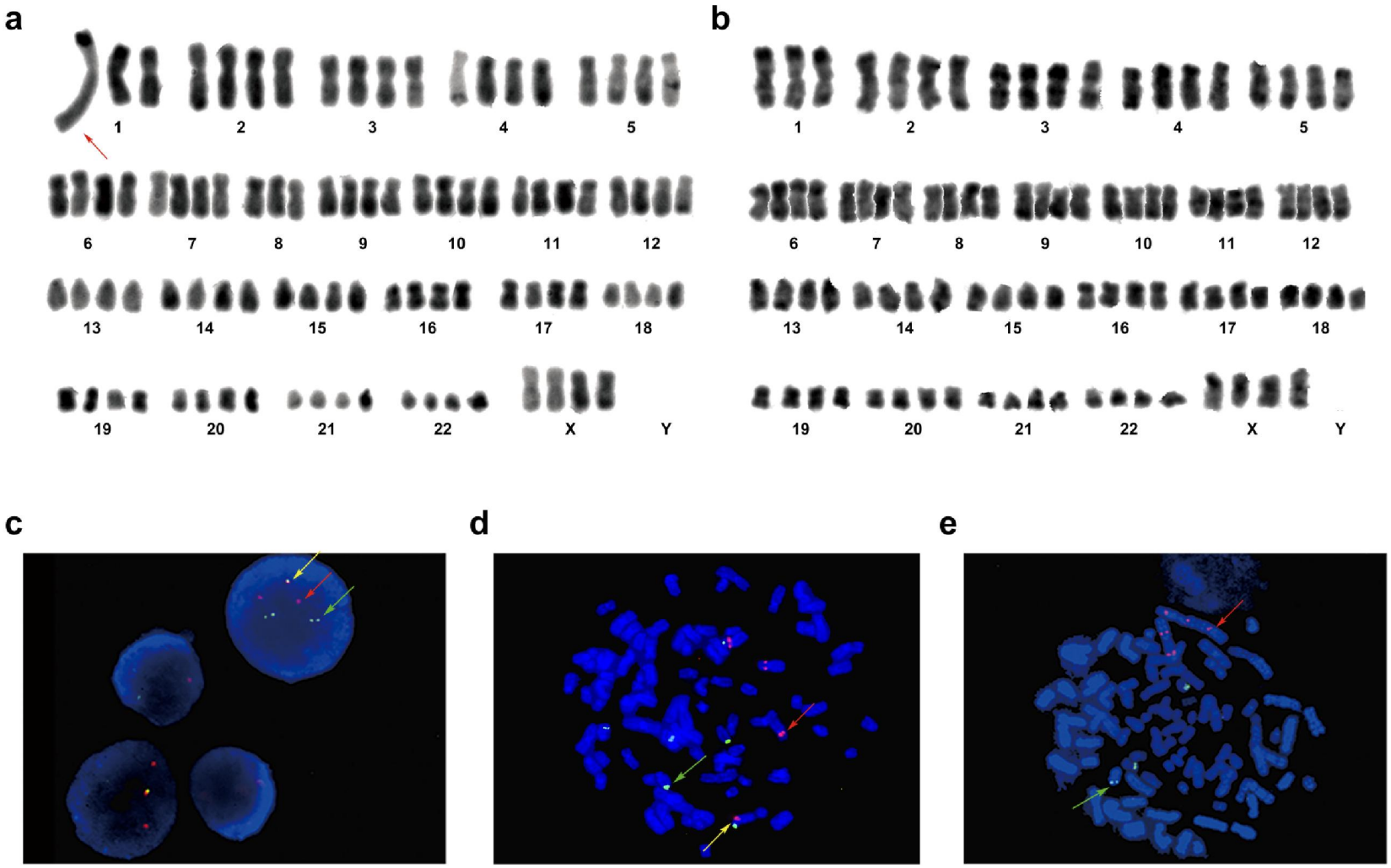
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Figure S4: Karyotype and FISH analysis (case 3). A: karyotype of diploidy (R-banding): 90, XXXX, add(1)(q21-23),-1,-8. 1q+ (red arrow). B: (R-banding at relapse): 91, XXXX,-1, del (8) (q24). C: FISH analysis with GLP *IGH* dual color breakpoint probe (located at 14q32). The picture displays one fusion, two red and two green signals (1F2O2G), indicating *IGH* translocation. D: FISH analysis with GSP *IGH / CCND3* double fusion probe (located at 6p21/14q32). The picture further confirms *IGH* translcoated to 6p23 (yellow arrow). E: In metaphase, FISH analysis with GLP *P53* / 1q21 dual color probe (located at 17p13.1/1q21), showing 1q21 (red arrow) amplification on 1q+, also amplification on 1p. Three green signals display deletion of *P53* (green arrow).

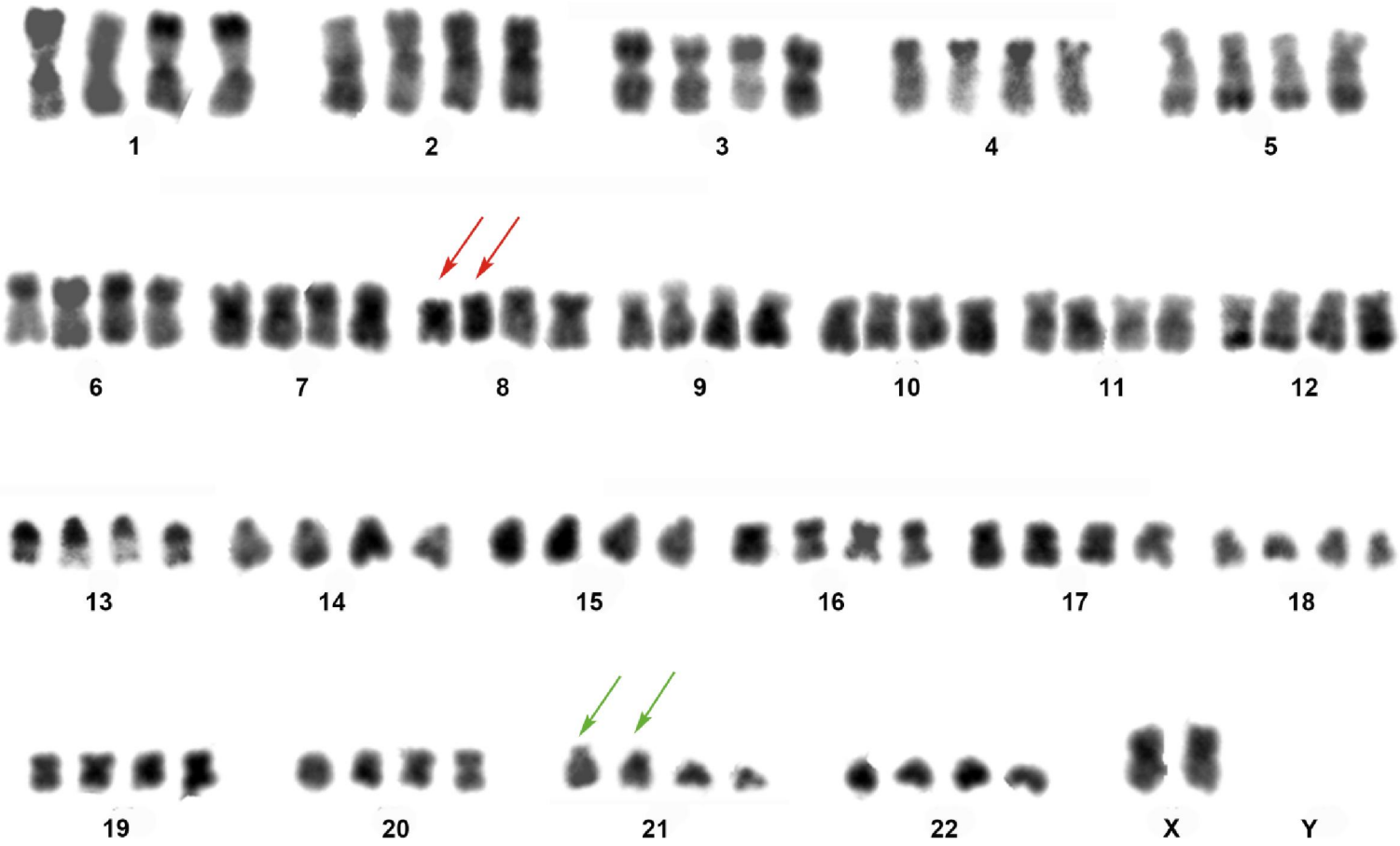

Figure S5: karyotype (R-banding) (case 5): 90, XX,-Y,-Y, t(8;21)(q22;q22)×2. 8q- (red arrow), 21q+ (green arrow).

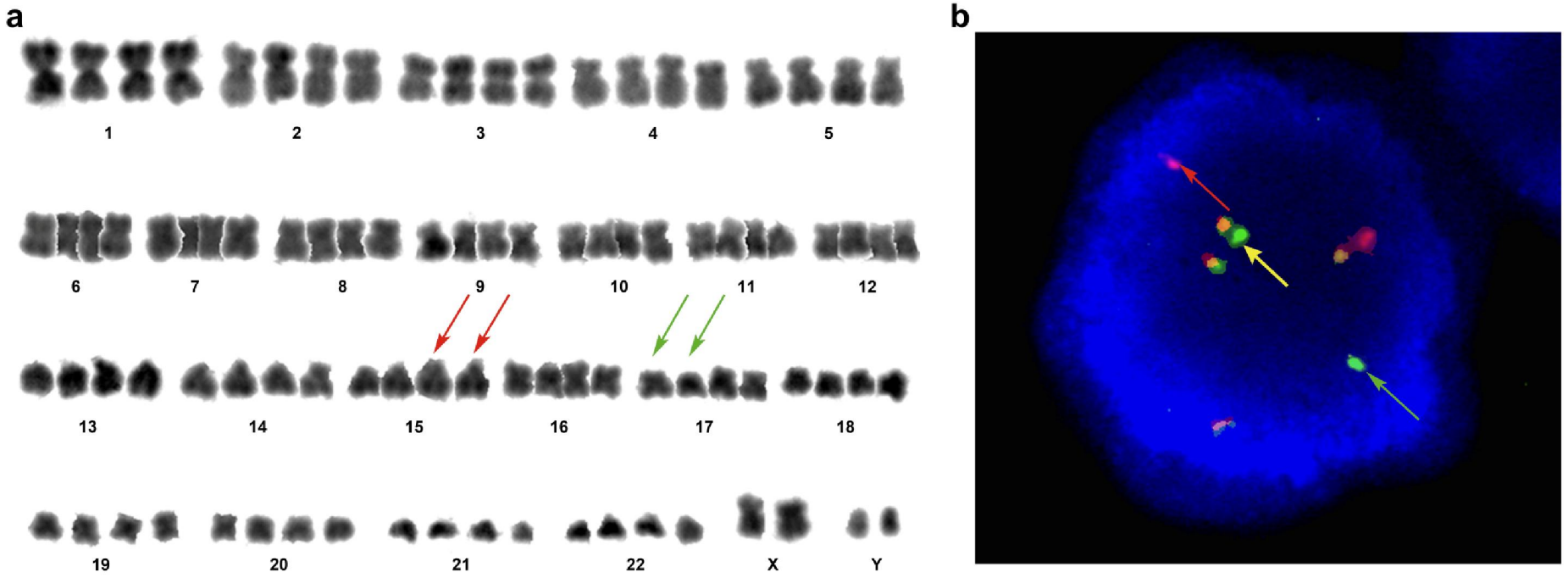

Figure S6: Karyotype and FISH analysis (case 10). A: karyotype (R-banding): 92,XXYY,t(15:17)(q22:q21)×2. 15q+ (red arrow) 17q- (green arrow). B: FISH analysis with GLP *PML / RARA* double color fusion probe (located at 15q22/17q21). In interphase FISH shows two pairs of fusion signals (yellow arrow), in addition to one green (*PML*: green arrow) and one red normal signals (*RARA*: red arrow).

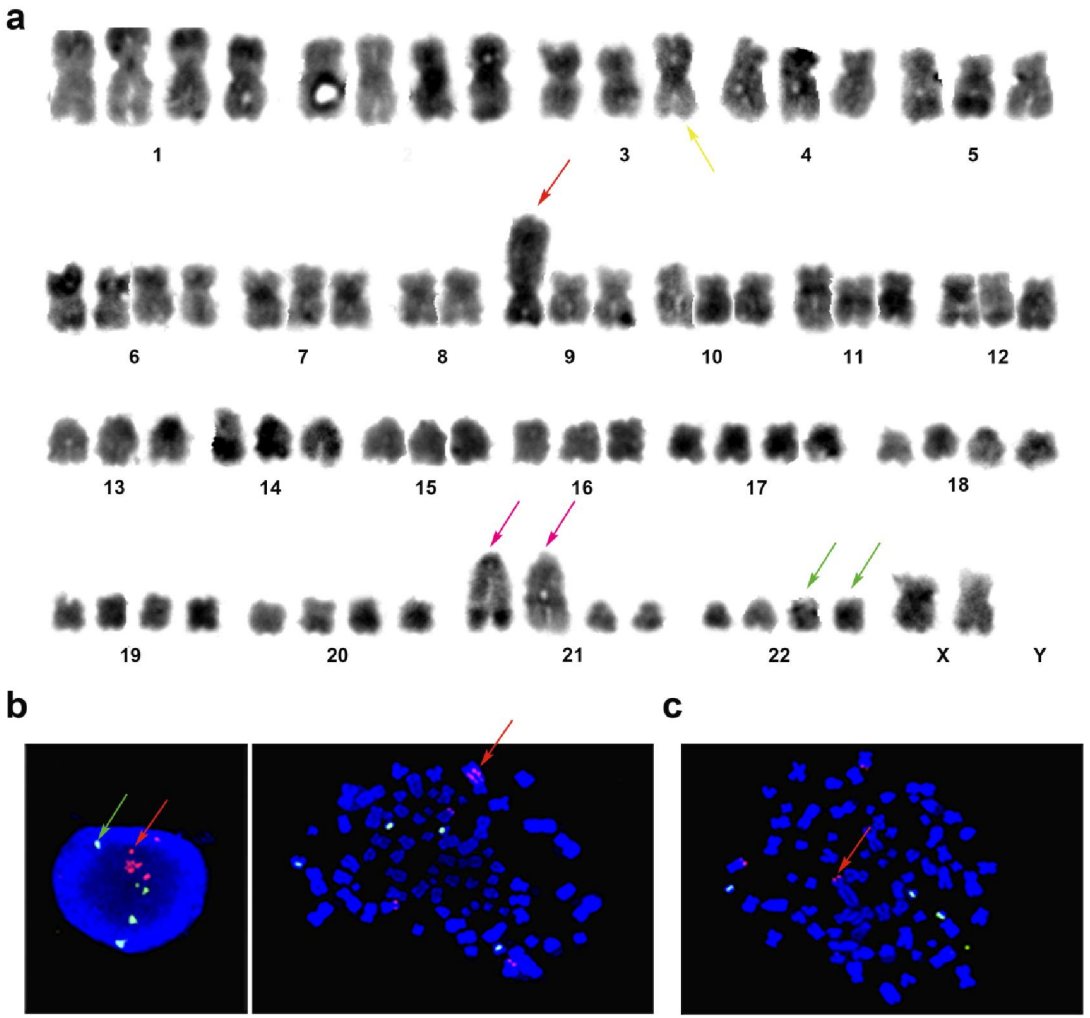
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Figure S7: Karyotype and FISH analysis (case 4). a: karyotype (R-banding): 76, XX, -X,+1,+2,i(3q),+6,-8,add(9)(p13),add(11)(q23),+17,+18,+19,+20,-21,der(22),+der(22), +marx2. idic (3) chromosomes (yellow arrow), 9p+ (red arrow), two der(22) (green arrow), two mar chromosomes (pink arrow). b: FISH analysis with GLP *p16*/CSP 17 dual color probe (located at 9p21/17p11.1-q11.1). In interphase, showing *p16* amplification (red arrow) compared to control CSP 17 (green arrow), in metaphase, *P16* is amplification on 9p (red arrow). c: FISH analysis with GLP *BCR / ABL* double color fusion probe (located at 22q11/9q34), one red signal shows longer 9p (red arrow). Normal four green signals of *BCR* gene (green arrow).

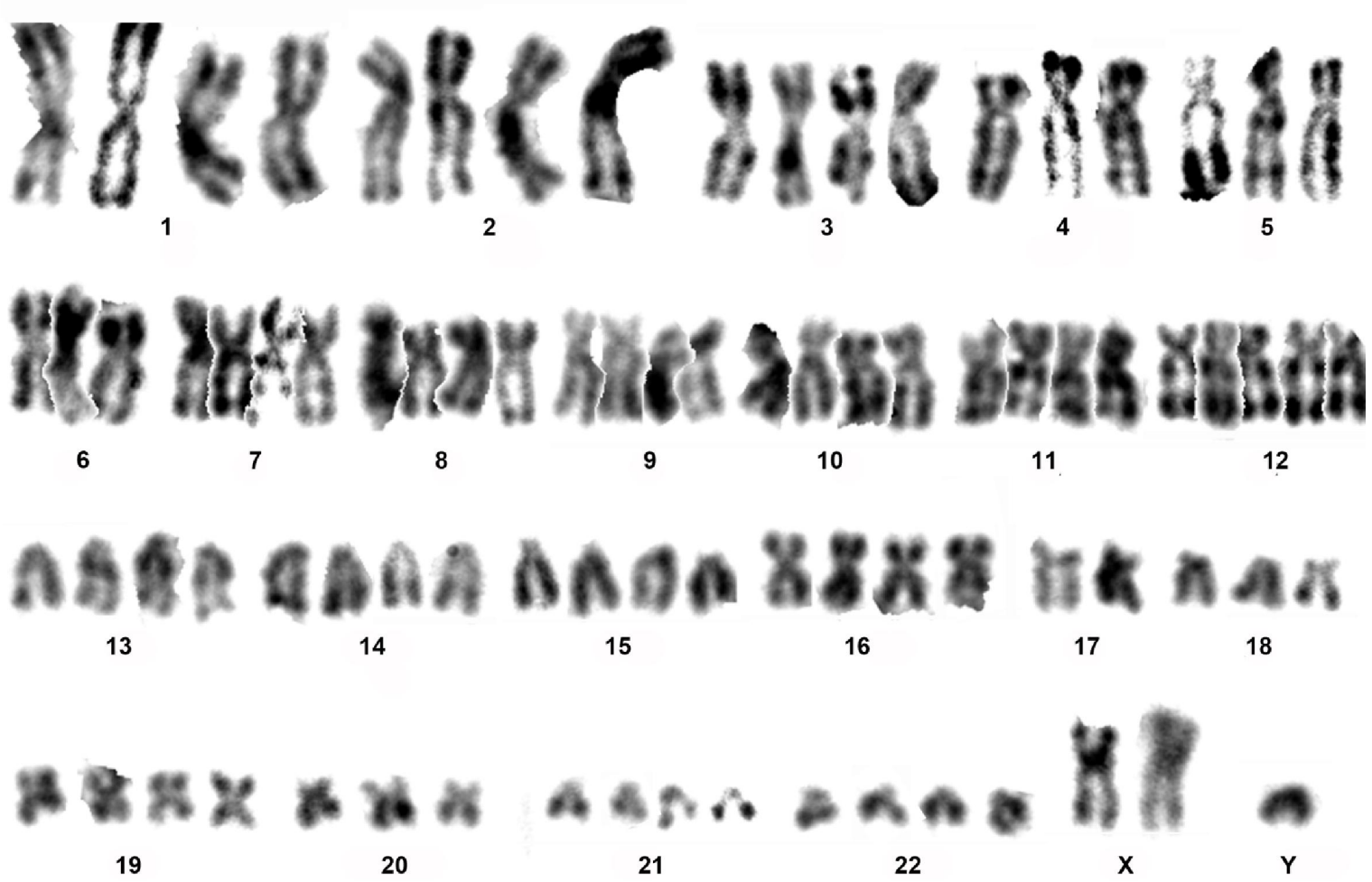

Figure S8: karyotype (R-banding) (case1): 85, XXY, -Y, -4, -5, -6, +12, -17, -17, -18, -20.