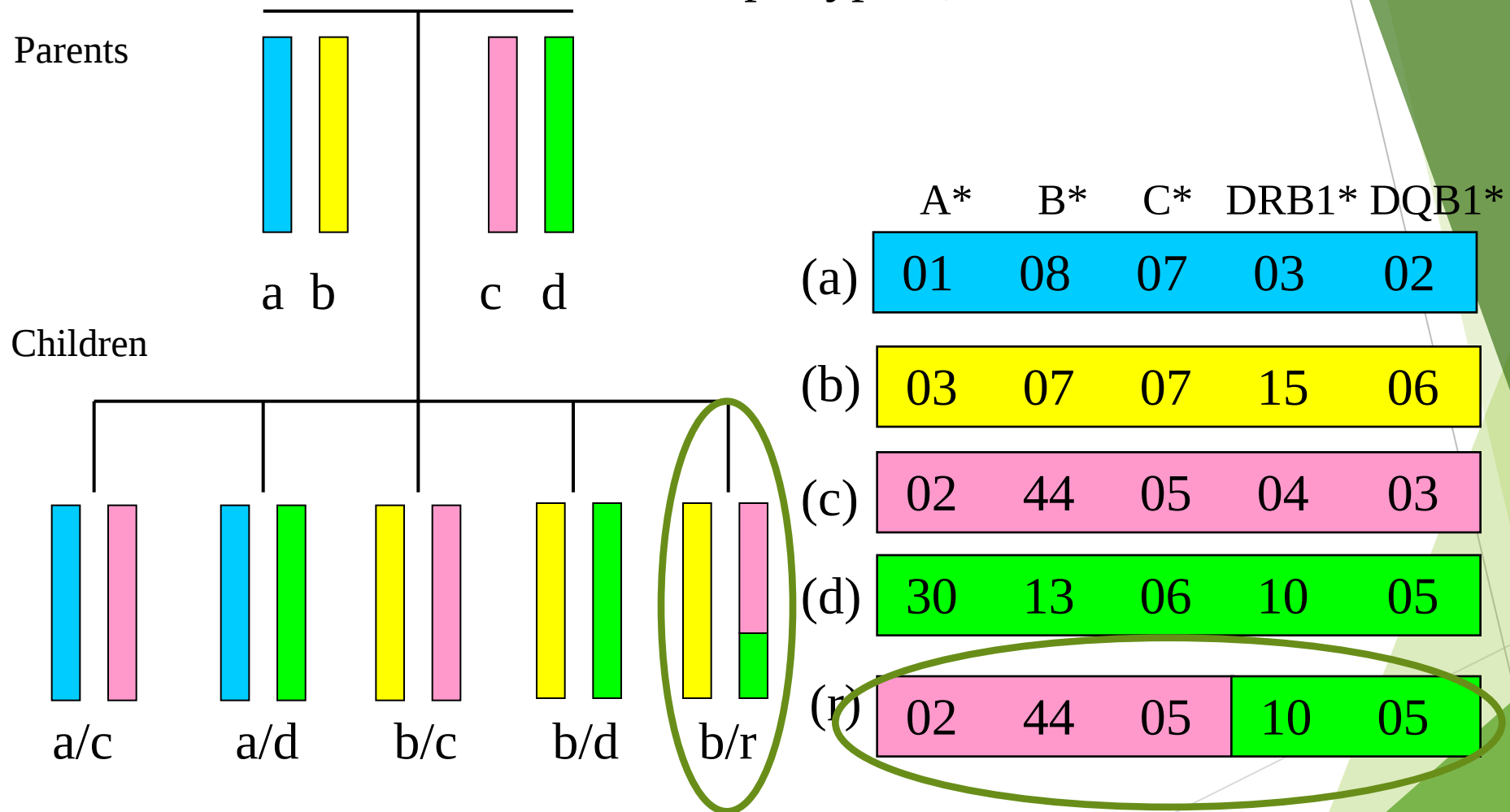


به نام خالق زیبائیا

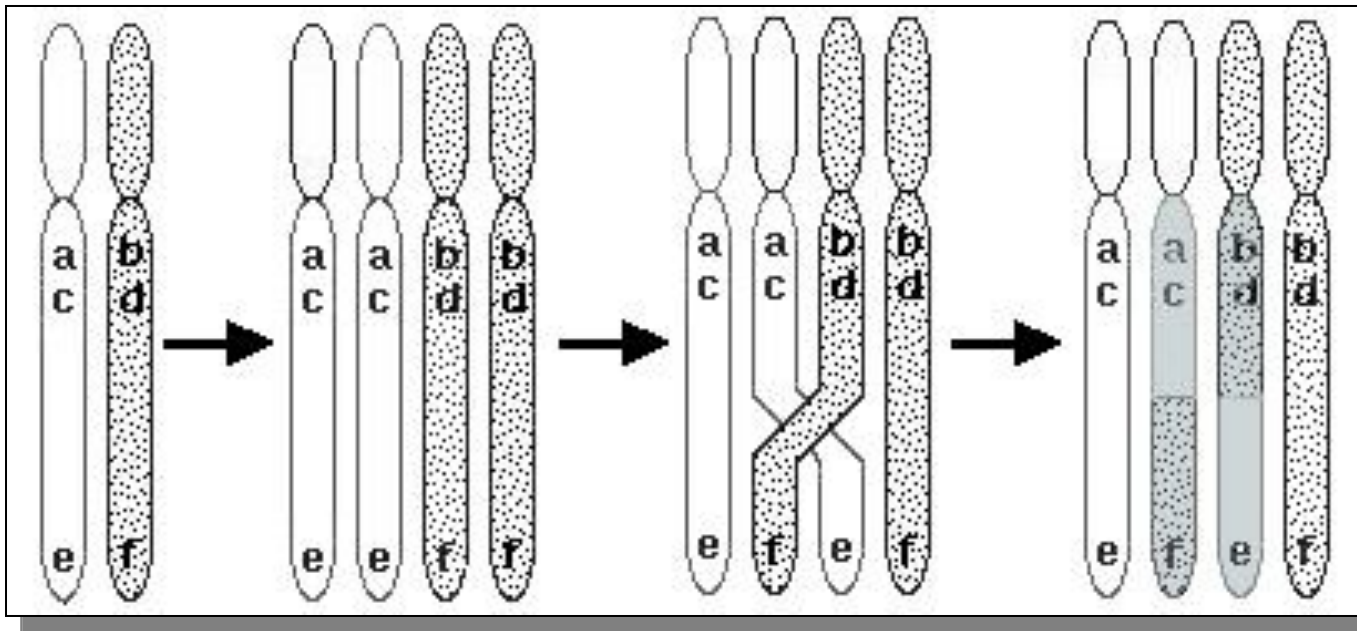


Inheritance of HLA Haplotypes

Father + Mother = 4 haplotypes (25% chance of identical sib)



Crossing over results in new haplotypes



Family with 4 haplotypes (1 HLA identical sibling)

HLA:	A*		B*		C*		DRB1*		DQB1*	
Patient *	02	29	44	51	15	16	07	-	02	-
Sib 1 *	02	29	44	51	15	16	07	-	02	-
Sib 2	24	29	07	44	07	16	07	15	02	06
Sib 3	02	-	13	51	06	15	07	-	02	-
Sib 4	24	29	07	44	07	16	07	15	02	06
Sib 5	02	-	13	51	06	15	07	-	02	-
Sib 6	02	-	13	51	06	15	07	-	02	-

Family with 5 haplotypes (0 HLA matches!)

HLA:	A*		B*		C*		DRB1*		DQB1*	
Patient	02	11	35	52	04	12	01	15	05	06
Sib 1	01	03	07	08	07	-	03	13	02	06
Sib 2	01	11	08	52	07	12	03	15	02	06
Sib 3	01	-	08	-	07	-	03	-	02	-
Sib 4	02	03	07	35	04	07	01	13	05	06
Sib 5	01	03	07	08	07	-	03	13	02	06
Sib 6	01	11	08	52	07	12	03	15	02	06

Haplotype Assignment: A Complex Case

- Patient: A*02,*24; B*35,*51; DRB1*11,*04
- Sister: A*02,*03; B*35,*35; DRB1*11,*01

- Step sister: A*24; B*35; DRB1*04,*07
- Step brother: A*24; B*35; DRB1*04,*15
- Step sister: A*03,*24; B*35; DRB1*11,*15
- Step sister: A*03,*24; B*35; DRB1*07,*11

Pedigree Analysis

- Step brother: $A^{*24}, ^{*24}; B^{*35}, ^{*35}; DRB1^{*04}, ^{*15}$
- Step sister: $A^{*24}, ^{*24}; B^{*35}, ^{*35}; DRB1^{*04}, ^{*07}$
- Step sister: $A^{*03}, ^{*24}; B^{*35}, ^{*35}; DRB1^{*11}, ^{*15}$
- Step sister: $A^{*03}, ^{*24}; B^{*35}, ^{*35}; DRB1^{*07}, ^{*11}$

- Parent 1: $A^{*24} B^{*35} DRB1^{*04} / A^{*03} B^{*35} DRB1^{*11}$
- Parent 2: $A^{*24} B^{*35} DRB1^{*15} / A^{*24} B^{*35} DRB1^{*07}$

Pedigree Analysis

- Parent 1: A*24 B*35 DRB1*04 / A*03 B*35 DRB1*11
- Parent 2: A*24 B*35 DRB1*15 / A*24 B*35 DRB1*07
- Patient: A*02, *24; B*35, *51; DRB1*11, *04
- Sister: A*02, *03; B*35, *35; DRB1*11, *01

Thus the parent 1 is the patient's father and parent 2 is step mother

- Father: A*24 B*35 DRB1*04 / A*03 B*35 DRB1*11
- Mother: A*02 B*35 DRB1*01 / A*02 B*51 DRB1*11

Thus the patient and her sister have no identical haplotype

One locus mismatched siblings

- Patient: A*02, A*30, B*13, B*51, DRB1*04,07
- Siblings: A*02, A*30, B*13, B*51, DRB1***11**,07
- Father: A*02, **A*30**, **B*13**, B*50, **DRB1*07**, *07
- Mother: **A*02**, **A*02**, **B*51**, **B*51**, **DRB1*04**, ***11**
- ❖ Patient: A*02:**04**, B*51:**01**, CW*16, DRB1*04
- ❖ Sibling: A*02:**34**, B*51:**05**, CW*04, DRB1*11

	Patient			sibling		
	A	B	DRB1	A	B	DRB1
Father	30	13	07	30	13	07
Mother	02: 04	51: 07	04	02: 34	51: 05	11

An Apparently 6/6 But Really Haploidentical Donor

➤ Patient and sibling: A*01,02; B*35,41; DRB1*11,15

➤ Father: A*01; B*35; C*01, 04; DRB1*11

Father's haplotypes: A*01; B*35; C*01; DRB1*11

A*01; B*35; C*04; DRB1*11

Patient's confirmatory typing:

❑ A*01, 02; B*35, 41; C*01, 16; DRB1*11, 15

Sibling's confirmatory typing:

❑ A*01, 02; B*35, 41; C*04, 16; DRB1*11, 15