

APPARENT EXCLUSION OF MATERNITY BY BOTH DUFFY AND KIDD.
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An apparent exclusion of maternity was found in two independent systems (Duffy and Kidd) in a Caucasian trio tested because of disputed paternity (see Table 1). No other contradictions to the rules of inheritance were observed in extensive testing (ABO, Rh, MNSs, Kell, GC, BF, HP, TF, PLG, Gm, Km, ESD, ACP, PGML, and GLO).

New samples were obtained from the child and mother as well as from members of her family. The results of Duffy and Kidd testing are shown in Figure one. Based on this testing it appears that the propositus' father (I-1) is excluded from her paternity in the Kidd system. A similar apparent exclusion is also present in her sister (II-5). The propositus' mother (I-2) appears to be excluded in the Duffy system. No other inconsistencies in the expected inheritance patterns were observed in tests on the family members.

Our interpretation of the testing in this family is that the propositus has inherited null alleles in two systems and passed both to her child. In the Duffy system the *Fy* appears to be present in the propositus' mother and in the Kidd system the *Jk* is present in her father. (Figure 2).

The chance (P) of one individual having "null" alleles in more than one genetic system is the product of the frequency of the allele in each system. In this case using $Fy = .005$ and $Jk = .001$, $P = 5 \times 10^{-6}$. (1) The chance of finding a child in a paternity case with both "nulls" is 1.25×10^{-6} since the chance of both parents passing one or one parent passing both alleles is 0.25.

We have not been able to find reports of cases with two "null" alleles in one individual except where the systems are on the same chromosome. (2) These unusual cases do not invalidate the use of multiple indirect exclusions in determining non-paternity. (3) Findings in families like the one reported here support using frequencies for "nulls" in calculating estimates of paternity.

REFERENCES

1. Polesky HF, Souhrada JM, Dykes DD. The Frequency of "null" genes calculated from trios in disputed parentage cases. 10th International Congress of the Society for Haemogenetics, Munchen, 1983: 161.
2. Dodd BE, Lincoln PJ, Insley J. An apparent exclusion of maternity disclosed by tests for Rh and PGMI. 10th International Congress of the Society for Haemogenetics, Munchen, 1983: 179.
3. Gershowitz H, Discussion. In: Walker RH, ed. Inclusion Probabilities in Parentage Testing. Arlington, Va: American Association of Blood Banks, 1983: 251.

Table 1

Duffy and Kidd Typing on Original Trio (Case 15731)						
	Fy			Jk		
	a	b	Titer	a	b	Titer
AF II-3	+	-		+	-	
M II-4	-	+	NI*	-	+	Hetero
C III-7	+	-	NI	+	-	Hetero

Adsorption and elution studies

II-4 negative anti-Fy^a, - Jk^a

III-7 negative anti-Fy^b, - Jk^b

* Not Informative

FIGURE ONE

FAMILY STUDY

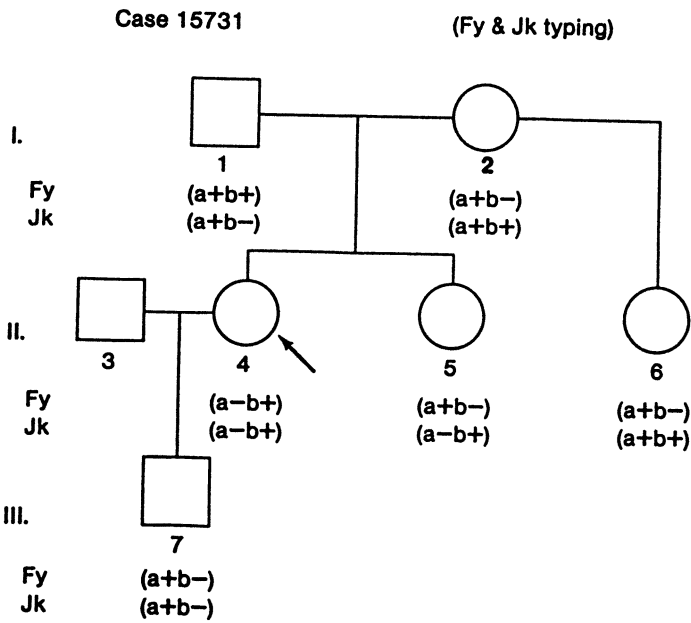


FIGURE TWO

Duffy and Kidd Genotypes - Case 15731

