SHORT COMMUNICATIONS

R Factors of Compatibility Group A

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Two *fi*⁻ plasmids, RA1 and RA2, conferring resistance to tetracycline and sulphonamide, derived from strains of *Aeromonas liquefaciens* (Aoki, Egusa, Ogata & Watanabe, 1971) were compatible with *fi*⁻ plasmids of all known compatibility groups, i.e. I, N, P, W, T, M, B, J, C, X and with R300 and R387 (Datta & Hedges, 1971; Hedges & Datta, 1971; Coetzee, Datta & Hedges, 1972; Datta & Hedges, 1972; Hedges, Datta & Fleming, 1972; and unpublished observations). We provisionally assigned these R factors to compatibility group A, but we had no other plasmid of this group, and were unable to test RA1 and RA2 for mutual compatibility (because their resistance markers were identical).

When R57b, a plasmid of group C, was transferred to *Escherichia coli* K12 carrying RA1, marked exclusion was observed (Datta & Hedges, 1972).

The exconjugants of this cross carried all resistance markers of both parental plasmids (ampicillin, chloramphenicol, sulphonamides and gentamicin/kanamycin, ACSuGk, from R57b and tetracycline and sulphonamides, TSu, from RA1). In these doubles the two R factors co-existed stably and from them were separately transferable (Table 1).

From one of these doubles a spontaneous segregant, resistant to tetracycline, sulphonamides and chloramphenicol (TSuC) was isolated without selection.

Table 1. *Compatibility of group A plasmids*

Donor	Recipient	Selection	Frequency of transfer	Exconjugant clones tested for presence of each plasmid
J62 (R57b)*	J53	C	3×10^{-4}	See Datta & Hedges, 1972
	J53 (RA1)	C	2×10^{-7}	
J53 (RA1) (R57b)	J62	T	4×10^{-5}	18T ^r C ^r : 2T ^r C ^s
		C	6×10^{-4}	18T ^s C ^r : 2T ^r C ^r
J53 (RA1-1)	J62	T	2×10^{-3}	20/20 T ^r C ^r
		C	2×10^{-3}	20/20 T ^r C ^r
J53 (R40a)*	J62	K	2×10^{-3}	—
	J62 (RA1-1)	K	1×10^{-3}	20/20 T ^r C ^r K ^r †
	J62 (RA1-1b)	K	2×10^{-3}	20/20 C ^r K ^r †
J62 (RA1-1b)	J53	C	3×10^{-4}	—
	J53 (RA1)	C	3×10^{-5}	20/20 C ^r T ^s
	J53 (RA2)	C	2×10^{-5}	20/20 C ^r T ^s

J62 and J53 are nutritionally distinguishable lines of *Escherichia coli* K12. Methods were as described by Coetzee *et al.* (1972). T indicates tetracycline; C, chloramphenicol; K, kanamycin.

* R40a, a plasmid which confers resistance to ampicillin, kanamycin and sulphonamides, is incompatible with R57b and therefore a member of compatibility group C (Datta & Hedges, 1972).

† Each R factor was separately transferable from the double.

When J53 (RA1) was used as a donor, the transfer rate to J62 was 10^{-5} ; no transfer of RA1 to J62 (RA1-1b) was detected (exclusion > 100-fold).

In this clone a gene for chloramphenicol resistance had been translocated from R57b to RA1; all three resistance markers were always transferred together in conjugation (Table 1) or in P1 transduction and the recombinant plasmid (RA1-I) was compatible with group C.

RA1-I could not be tested for compatibility with RA1 or RA2 (the naturally occurring A group plasmids) because there was no marker by which the latter could be distinguished. A segregant of RA1-I lacking the tetracycline resistance marker was detected by replica plating. This segregant, RA1-Ib, conferred CSu resistance, and could therefore be tested for compatibility with the A plasmids. They were incompatible (Table 1).

Thus use of a laboratory recombinant plasmid has enabled us to define a compatibility group, whose naturally occurring members cannot be tested for mutual compatibility.

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