This was a review of transferable (plasmid-borne) drug resistance, discovered by the Japanese in the shigellae, which cause human bacillary dysentery. Resistance was usually multiple, and all resistances were transferred simultaneously between bacteria by conjugation. [The SC® indicates that this paper has been cited in over 315 publications.]

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Watanabe designated the transferable elements "resistance factors" (R factors), and he postulated the presence of an agent in the linkage group that would mediate the transfer, which he named the "resistance transfer factor" or RTF.1

My observations with the antibiotic-resistant Salmonella typhimurium, epidemic in calves and man from 1963, revealed R factors different from those in Japan. The strain concerned belonged to phage-type 29 and was predominantly resistant to ampicillin (A), streptomycin (S), sulphonamides (Su), and tetracyclines (T). It transferred A, SSu, and T independently to Escherichia coli K12 in overnight crosses.

Further work showed that A and SSu were independent, nonautotransferring resistance plasmids that were mobilised by the RTF, an independent transfer plasmid, which I designated Λ. This was transferred alone with high frequency in overnight crosses, and it also mediated the transfer of plasmids such as A and SSu at much lower frequency and apparently without stable recombination. It recombined stably with T, to form an R factor similar to those discovered by the Japanese.